



# SERVICE MANUAL

## Sec. 1: Main Section

- Specifications
- Preparation for Servicing
- Adjustment Procedures
- Schematic Diagrams
- CBA's

## Sec. 2: Deck Mechanism Section

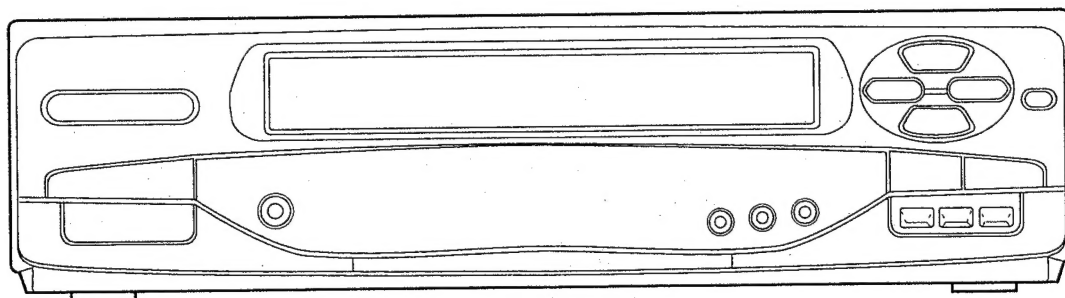
- Standard Maintenance
- Alignment for Mechanism
- Disassembly/Assembly of Mechanism
- Front Loading Assembly
- Alignment Procedures of Mechanism

## Sec. 3: Exploded views and Parts List Section

- Exploded views
- Parts List

## VIDEO CASSETTE RECORDER

**13A-109 / 13A-129 /  
13A-509 / 13A-529**



PAL

# MAIN SECTION

## VIDEO CASSETTE RECORDER

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13A-509 / 13A-529**

### Sec. 1: Main Section

- Specifications
- Preparation for Servicing
- Adjustment Procedures
- Schematic Diagrams
- CBA' s

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# SPECIFICATIONS

Description	Unit	Minimum	Nominal	Maximum	Mode	Remark
<b>1. Video</b>						
1-1. Video Output (PB)	Vp-p	0.8	1.0	1.2	SP	FL6A
1-2. Video Output (R/P)	Vp-p	0.8	1.0	1.2	SP	
1-3. Video S/N Y (R/P) INPUT:50% WHITE	dB	40	45		SP	HPF:1KHz LPF:5MHz SC TRAP ON
1-4. Video Color S/N AM (R/P) INPUT:100% WHITE	dB	35	41		SP	HPF:1KHz LPF:500KHz SC TRAP ON
1-5. Video Color S/N PM (R/P) INPUT:100% WHITE	dB	30	36		SP	HPF:1KHz LPF:500KHz SC TRAP ON
1-6. Resolution (PB)	Line	230	240		SP	FL6M
<b>2. Servo</b>						
2-1. Jitter Low (PB)	μsec		0.07	0.12	SP	FL6N
2-2. Wow & Flutter(R/P)	%		0.3	0.6	SP	E-30, CCIR, WTD
<b>3. Normal Audio</b>						
3-1. Output (PB)	dBV	-10	-6	-2	SP	FL6A
3-2. Output (R/P)	dBV	-10	-6	-1.5	SP	
3-3. S/N (R/P)	dB	36	40		SP	
3-4. Distortion (R/P)	%		1.5	4.0	SP	INPUT:-10dBV
3-5. Freq. resp (R/P) at 200Hz (-20dB ref. 1kHz) at 6kHz	dB	-6	-3		SP	

**Note:** Nominal specs represent the design specs. All units should be able to approximate these – some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable; In no case should a unit fail to meet limit specs.

# IMPORTANT SAFETY PRECAUTIONS

## Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a  $\triangle$  on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

## Precautions during Servicing

**A.** Parts identified by the  $\triangle$  symbol are critical for safety. Replace only with part number specified.

**B.** In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.

Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

**C.** Use specified internal wiring. Note especially:

- 1) Wires covered with PVC tubing
- 2) Double insulated wires
- 3) High voltage leads

**D.** Use specified insulating materials for hazardous live parts. Note especially:

- 1) Insulation tape
- 2) PVC tubing
- 3) Spacers
- 4) Insulators for transistors

**E.** When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

**F.** Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

**G.** Check that replaced wires do not contact sharp edges or pointed parts.

**H.** When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

**I.** Also check areas surrounding repaired locations.

**J.** Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

**K.** Crimp type wire connector

The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.

Replacement procedure

1) Remove the old connector by cutting the wires at a point close to the connector.

**Important:** Do not re-use a connector. (Discard it.)

2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

4) Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

**L.** When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

## Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

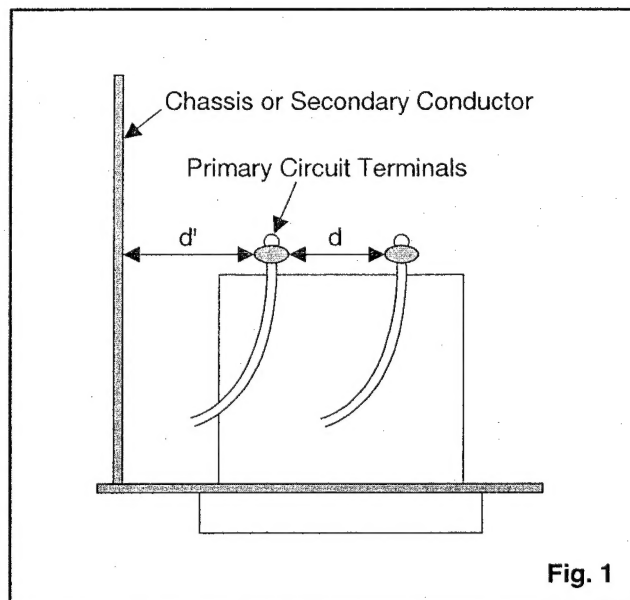
### 1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance ( $d$ ) and ( $d'$ ) between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

**Table 1 : Ratings for selected area**

AC Line Voltage	Clearance Distance ( $d$ ) ( $d'$ )
230 V	$\geq 3\text{mm}(d)$ $\geq 6\text{mm}(d')$

**Note:** This table is unofficial and for reference only.  
Be sure to confirm the precise values.



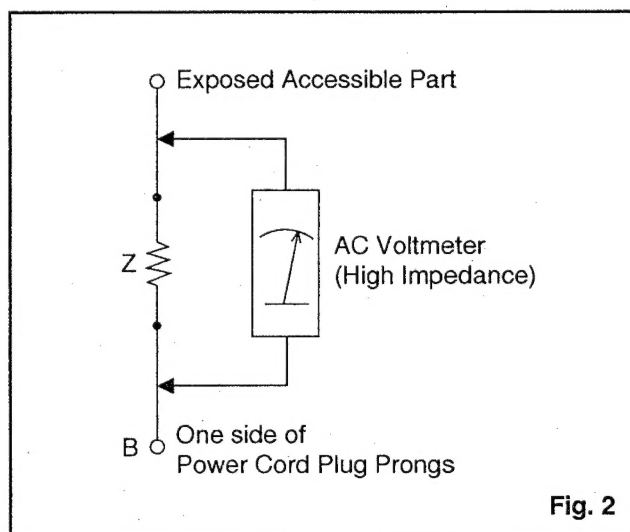
**Fig. 1**

### 2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

#### Measuring Method (Power ON) :

Insert load  $Z$  between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load  $Z$ . See Fig. 2 and the following table.



**Fig. 2**

**Table 2 : Leakage current ratings for selected areas**

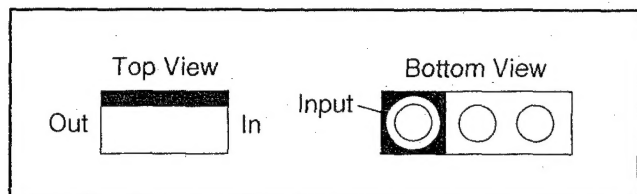
AC Line Voltage	Load Z	Leakage Current (i)	One side of power cord plug prongs (B) to:
230 V	2k $\Omega$ RES. Connected in parallel	$i \leq 0.7\text{mA AC Peak}$ $i \leq 2\text{mA DC}$	RF or Antenna terminals
	50k $\Omega$ RES. Connected in parallel	$i \leq 0.7\text{mA AC Peak}$ $i \leq 2\text{mA DC}$	A/V Input, Output

**Note:** This table is unofficial and for reference only. Be sure to confirm the precise values.

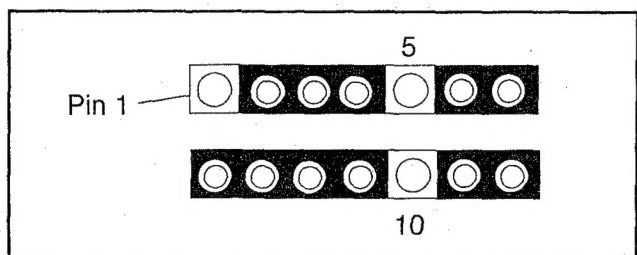
# STANDARD NOTES FOR SERVICING

## Circuit Board Indications

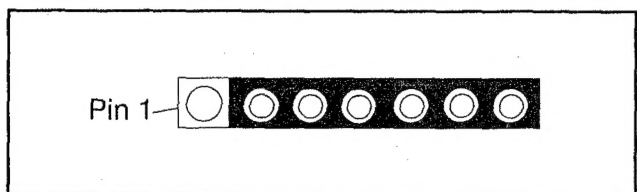
- a. The output pin of the 3 pin Regulator ICs is indicated as shown.



- b. For other ICs, pin 1 and every fifth pin are indicated as shown.

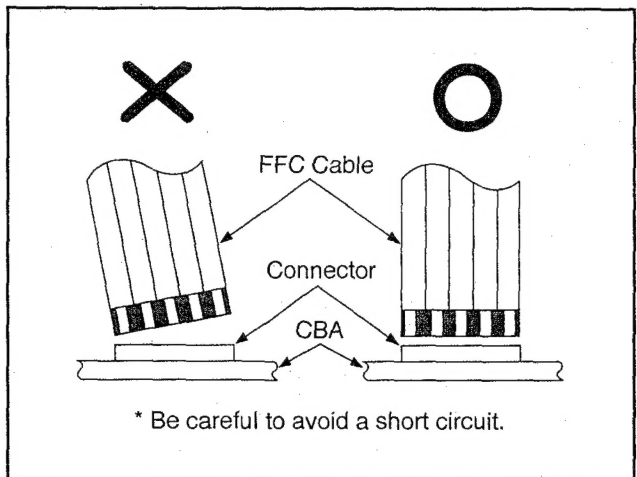


- c. The 1st pin of every male connector is indicated as shown.



## Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



## How to Remove / Install Flat Pack-IC

### 1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

- (1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

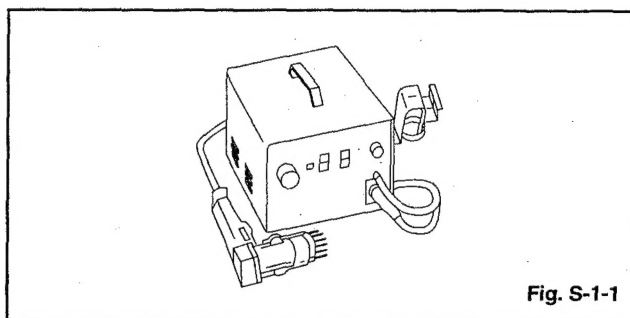


Fig. S-1-1

- (2) Remove the flat pack-IC with tweezers while applying the hot air.
- (3) Bottom of the flat pack-IC is fixed with glue to the CBA, when removing entire flat pack-IC. First apply soldering iron to center of the flat pack-IC and Heat up. Then Remove (glue will be melted). (Fig. S-1-6)
- (4) Release the flat pack-IC from the CBA using Tweezers. (Fig. S-1-6)

### Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)
2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder-lands under the IC when removing it.

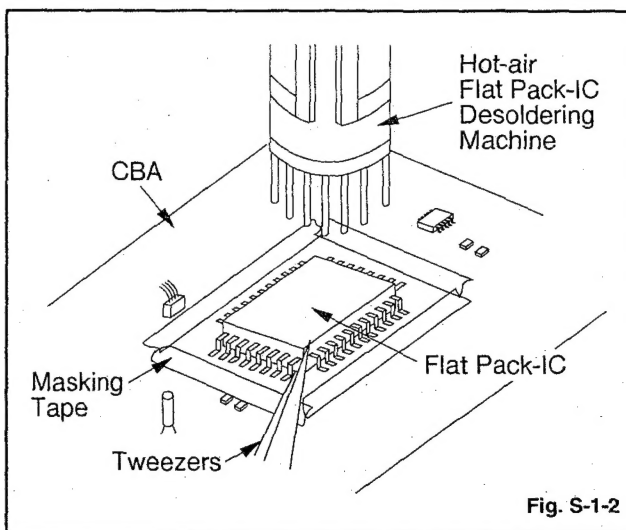
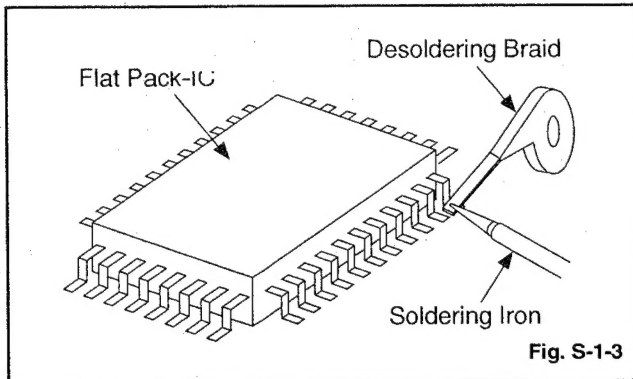


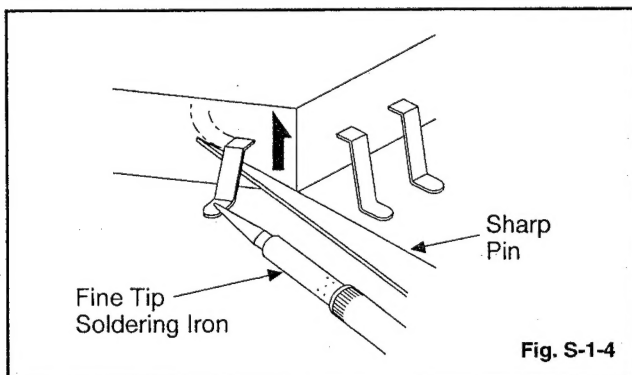
Fig. S-1-2

### With Soldering Iron:

- (1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)



- (2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)



- (3) Bottom of the flat pack-IC is fixed with glue to the CBA, when removing entire flat pack-IC. First apply soldering iron to center of the flat pack-IC and Heat up. Then Remove (glue will be melted). (Fig. S-1-8)
- (4) Release the flat pack-IC from the CBA using Tweezers. (Fig. S-1-6)

### With Iron Wire:

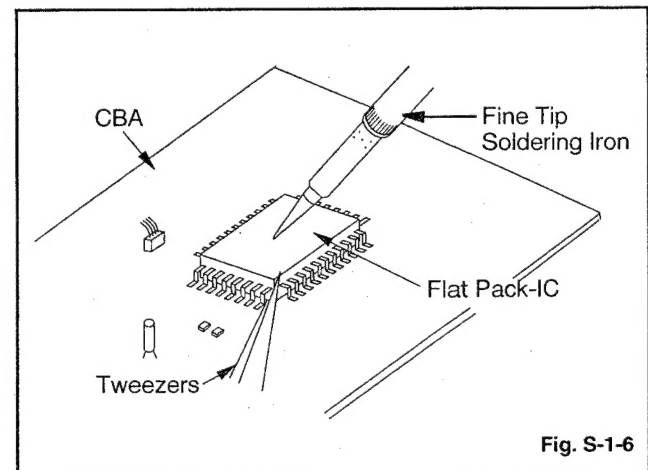
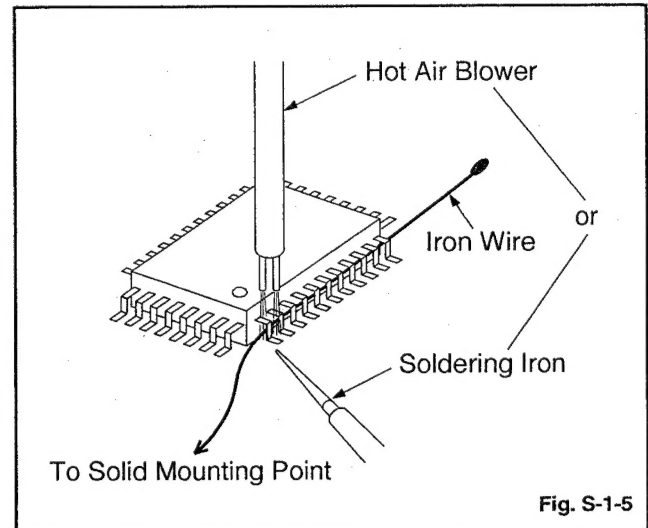
- (1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
- (2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
- (3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.
- (4) Bottom of the flat pack-IC is fixed with glue to the CBA, when removing entire flat pack-IC. First apply

soldering iron to center of the flat pack-IC and Heat up. Then Remove (glue will be melted). (Fig. S-1-6)

- (5) Release the flat pack-IC from the CBA using Tweezers. (Fig. S-1-6)

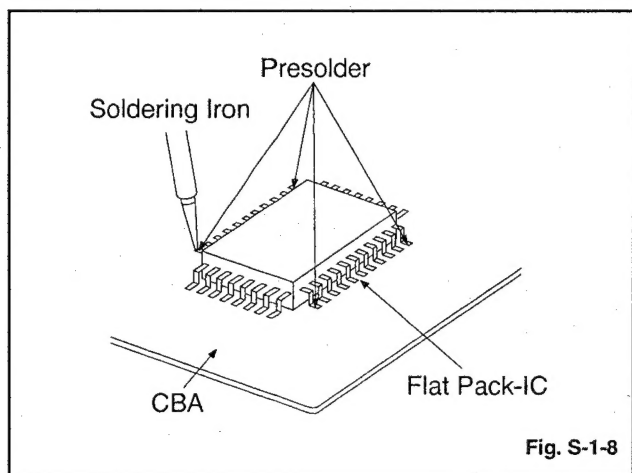
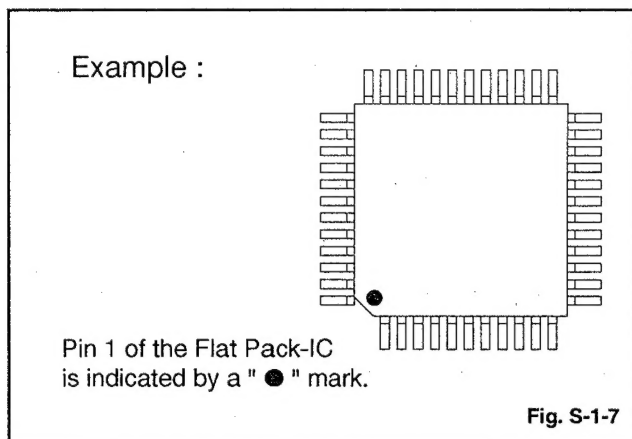
### Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.



## 2. Installation

- (1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.
- (2) The "●" mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then pre-solder the four corners of the flat pack-IC. (See Fig. S-1-8.)
- (3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.



## Instructions for Handling Semiconductors

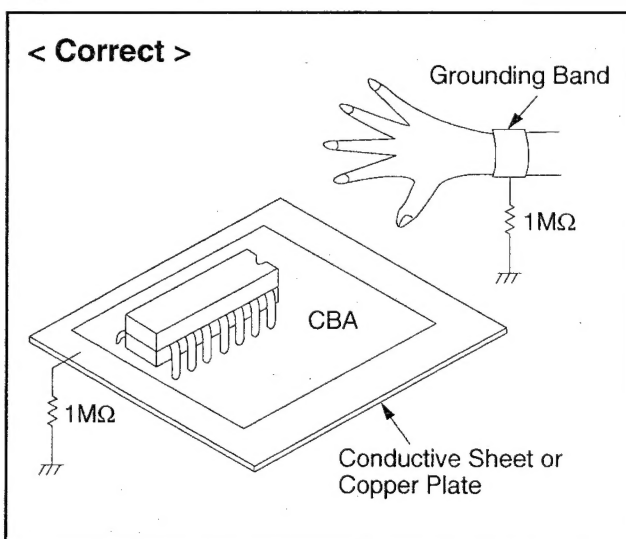
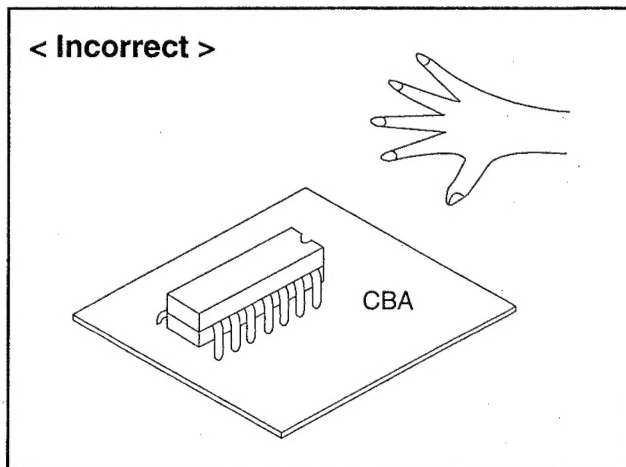
Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

### 1. Ground for Human Body

Be sure to wear a grounding band ( $1\text{M}\Omega$ ) that is properly grounded to remove any static electricity that may be charged on the body.

### 2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding ( $1\text{M}\Omega$ ) on the workbench or other surface, where the semiconductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semiconductors with your clothing.



# PREPARATION FOR SERVICING

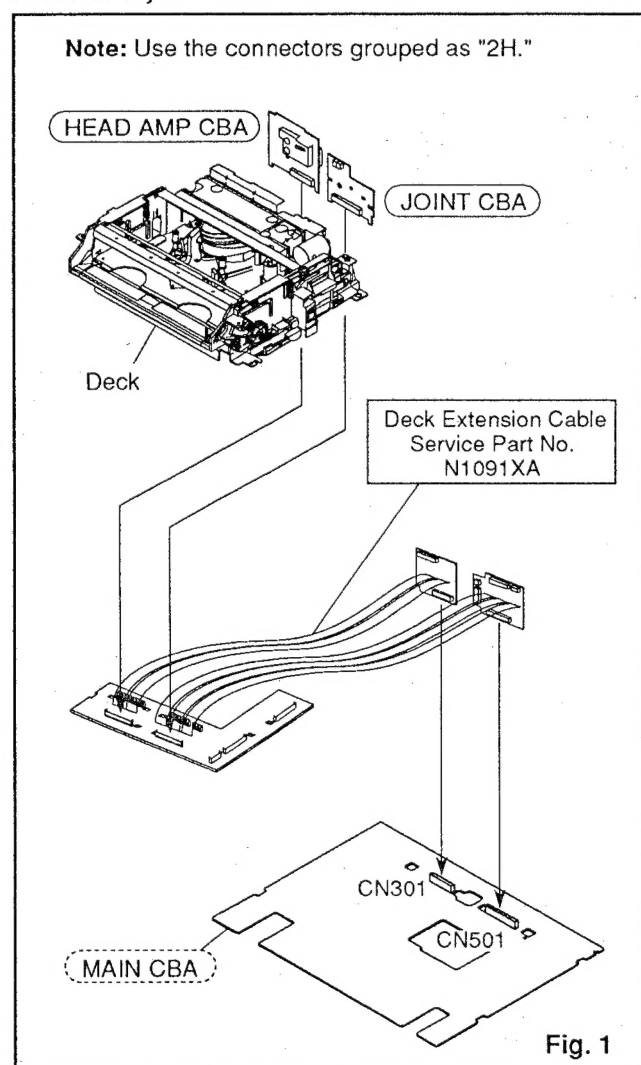
## How to use Deck Extension Cable

- (1) Remove the Deck Mechanism Assembly. If needed, remove the Main CBA from the chassis. Refer to "Disassembly Instructions" on pg. 1-5-1.
- (2) Use the Deck Extension Cable to connect the Deck Mechanism Assembly to the Main CBA.  
(Deck Extension Cable: N1091XA)

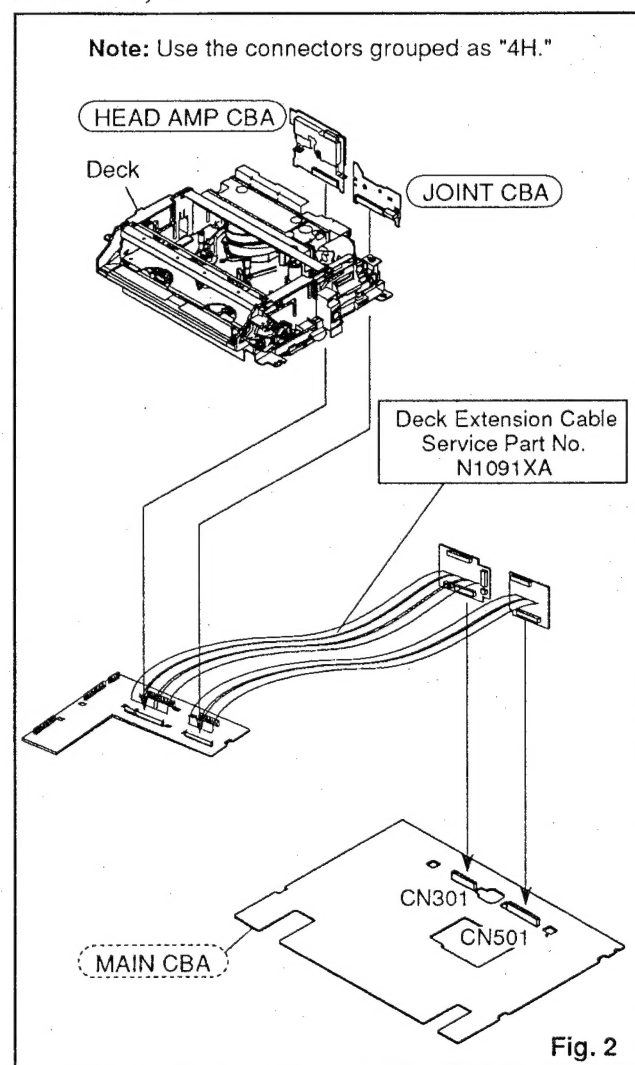
## Comparison Chart of Models and Marks

Model	Mark	Model	Mark
13A-109	A	13A-509	C
13A-129	B	13A-529	D

### Marks: A, B



### Marks: C, D



## How to Enter the Service Mode

**Note:** When the unit is set in the service mode, the whole display will keep blinking.

### About Optical Sensors

#### **Caution:**

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate erratically.

#### **What to do for preparation**

After plugging in the unit, connect TP503 (SENSOR INHIBITION) to TP504 (GROUND). This will stop the function of Tape Start Sensor, Tape End Sensor and Reel Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.)

Insert a tape into the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly.

**Note:** Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.

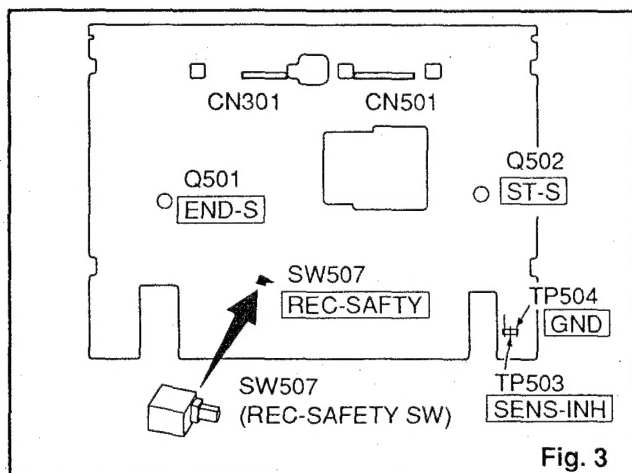
### About REC-Safety Switch

#### **Caution:**

The REC-Safety Switch is directly mounted on the Main CBA. When the Deck Mechanism Assembly is removed from the Main CBA for servicing, this switch does not work automatically.

#### **What to do for preparation**

In order to record, press the Rec button while pushing REC-SAFETY SW on the Main CBA.

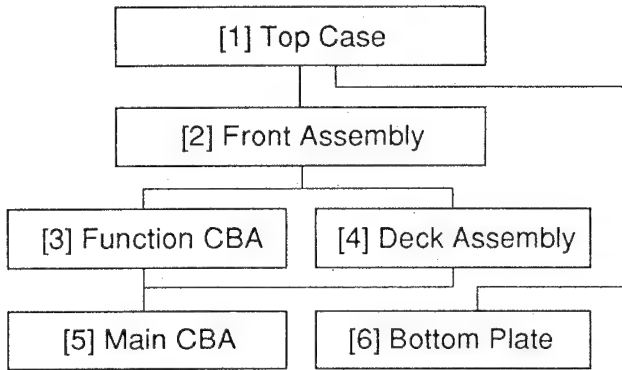




# DISASSEMBLY INSTRUCTIONS

## 1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



## Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/UNLOCK/ RELEASE/UNPLUG/ DESOLDER	Note
[1]	Top Case	1	5(S-1)	-
[2]	Front Assembly	2, 3	*7(L-1)	1
[3]	Function CBA	2, 4	*(L-2), (CN502)	2
[4]	Deck Assembly	5	7(S-2), (CN301, CN501)	3
[5]	Main CBA	4, 6, 7	2(S-4), *2(L-3)	4
[6]	Bottom Plate	6	*2(L-4)	5

① Identification (location) No. of parts in the figures

② Name of the part

③ Figure Number for reference

④ Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.

P=Spring, L=Locking Tab, S=Screw,  
CN=Connector

\*=Unhook, Unlock, Release, Unplug, or Desolder

e.g. 2(S-2) = two Screws (S-2),

2(L-2) = two Locking Tabs (L-2)

⑤ Refer to "Reference Notes".

## Reference Notes

**CAUTION** Locking Tabs (L-1) are fragile. Be careful not to break them.

1. Release 7 Locking Tabs (L-1). To do this, first release three Locking Tabs (A) at the bottom, and then four Locking Tabs (B) at the top. (Fig. 2, 3)
2. Disconnect Connector (CN5501) to remove Function CBA. Hold Main CBA while pulling up Function CBA. (Fig. 4)
3. Remove 7 Screws (S-2) and (S-3). Then slowly lift Deck Assembly up. Lifting Deck Assembly disconnects 2 Connectors (CN2901, CN3501). (Fig. 5)
4. First remove 2 Screws (S-4). Then, releasing 2 Locking Tabs (L-3), lift Main CBA. (Fig. 6, 7)
5. If you are disassembling Bottom Plate before Main CBA, remove 2 Screws (S-4) now. Then slide Bottom Plate in the direction of the big arrow as you press down two Locking Tabs (L-4).

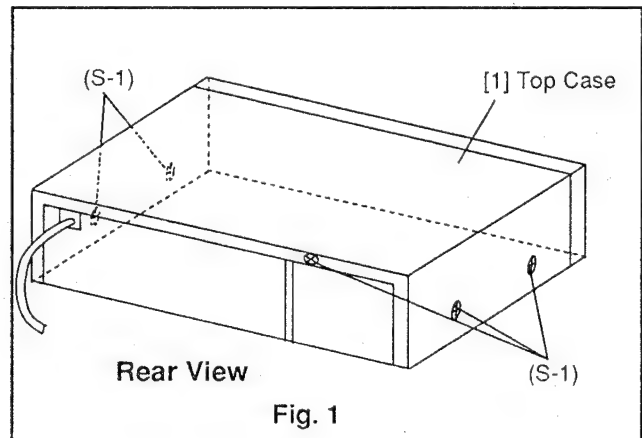


Fig. 1

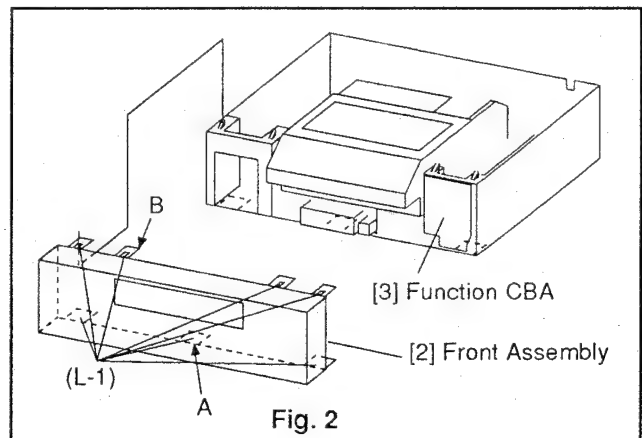
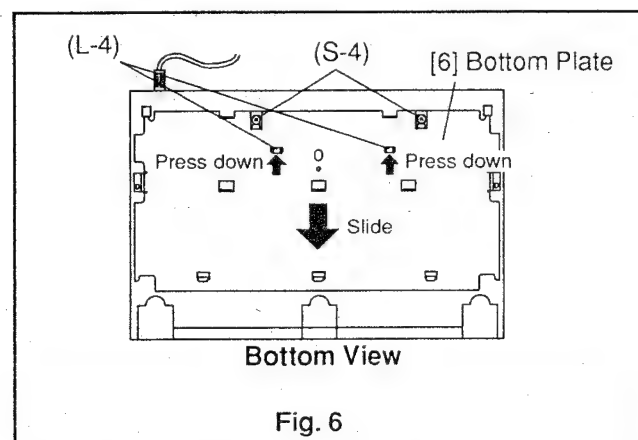
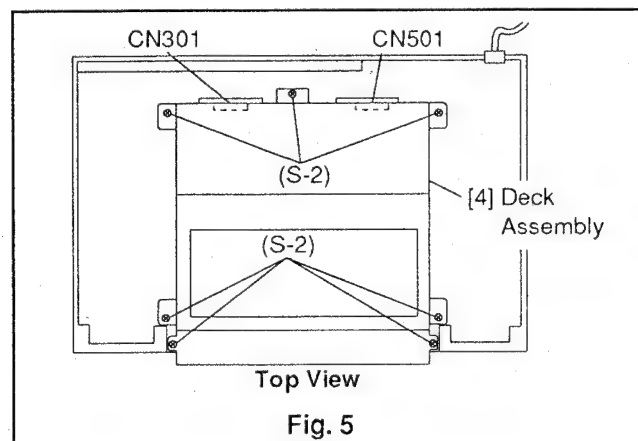
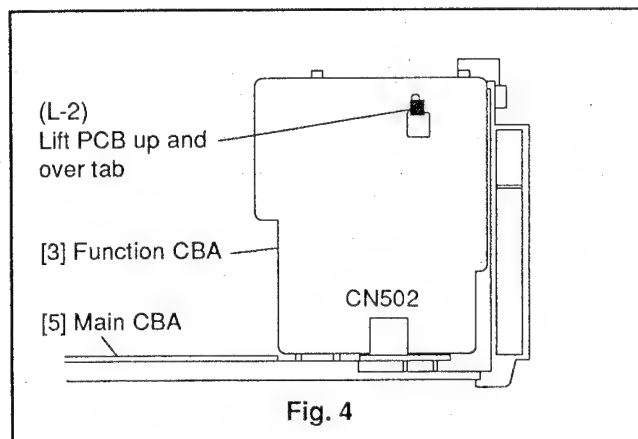
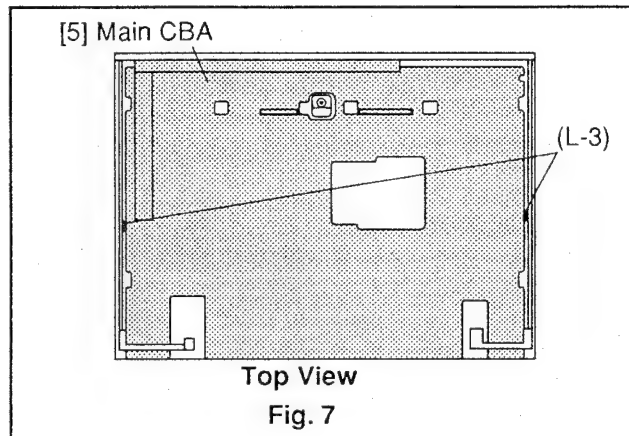
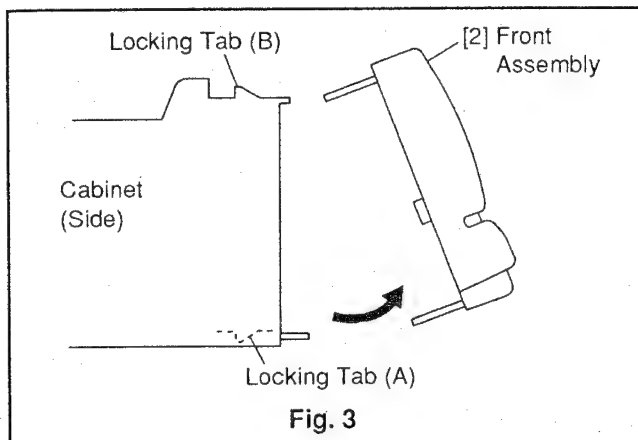


Fig. 2



# ELECTRICAL ADJUSTMENT INSTRUCTIONS

**General Note:** "CBA" is an abbreviation for "Circuit Board Assembly".

## Notes:

1. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.
2. To perform these alignment / confirmation procedures, make sure that the tracking control is set in the center position: Press both CHANNEL "UP" and "DOWN" buttons at the same time. ( VCR' s Front Panel only )

## Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe, V-Range: 0.001~50V/Div., F-Frange: AC~DC-20MHz
2. PAL Pattern Generator (color bar with 100% white)
3. Alignment Tape ( FL6A )
4. Blank Tape (Available Locally)
5. Spectrum Analyzer
6. UP Converter
7. DC Voltmeter
8. TV Modulator
9. Distortion meter

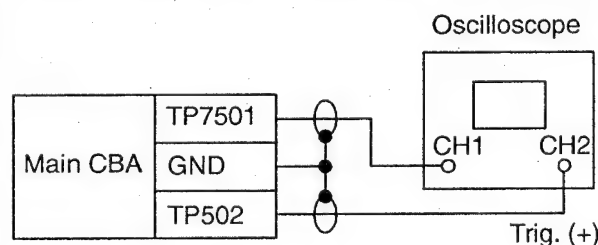
## 1. Head Switching Position Adjustment

**Purpose:** To determine the Head Switching point during playback.

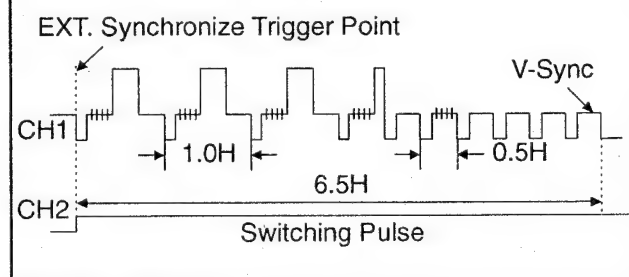
**Symptom of Misadjustment:** May cause Head Switching noise or vertical jitter in the picture.

Test Point	Adj. Point	Mode	Input
TP7501(V-OUT) TP502(RF-SW) GND	VR501 (Switching Point)	PLAY (SP)	----
Tape	Measurement Equipment	Spec.	
FL6A	Oscilloscope	6.5H±1H (412.7±60µs)	

### Connections of Measurement Equipment



**Figure 1**



### Reference Note:

TP502, TP7501, VR501 : Main CBA

- Play back the test tape and adjust VR501 so that the V-sync front edge of the CH1 video output waveform is at the 6.5H(412.7µs) delayed position from the rising edge of the CH2 head switching pulse waveform.

## 2. V-Out Level Adjustment

**Purpose:** To set optimum luminance video out level.

**Symptom of Misadjustment:** If the video out level is too high, The TV may overload. If the level is too low, The S/N ratio deteriorates.

Test Point	Adj. Point	Mode	Input
TP7501 (V-OUT) GND	VR301 (E-E LEVEL)	E-E	Color Bar Signal with 100% white
Tape	Measurement Equipment	Spec.	
----	Pattern Generator Oscilloscope	$1 \pm 0.1V_{p-p}$	

### Connections of Measurement Equipment

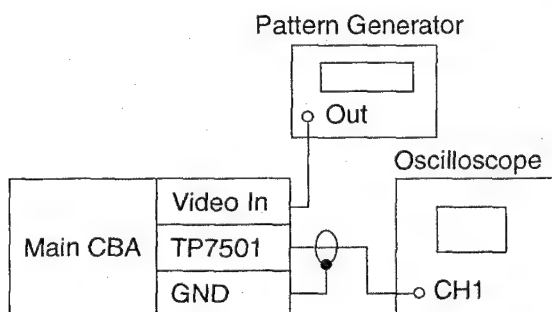
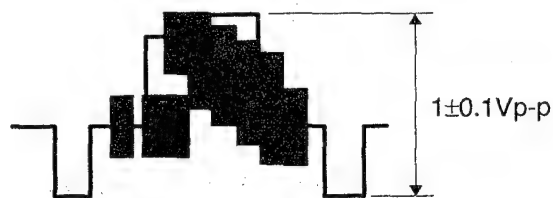


Figure 2



### Reference Notes:

TP7501, VR301 : Main CBA

1. Input the color bar signal with window 100% white to video input.
2. Adjust VR301 so that the video level becomes  $1 \pm 0.1V_{p-p}$ . (Connected to TV)

## 3. FM Carrier Adjustment

**Purpose:** To align FM carrier deviation.

**Symptom of Misadjustment:** If the deviation is not correct, abnormal contrast of light and dark on the picture may be seen.

If the carrier deviation is not correct, beats appear on the picture.

Test Point	Adjustment Point	Mode	Input
TP301 (Y-REC) TP502 (RF-SW) GND	VR302 (Y-CAR)	REC. (SP)	Color Bar with 100% white
Tape	Measurement Equipment	Spec.	
Blank Tape	Pattern Generator Spectrum An- alyzer Oscilloscope	Sync-tip $3.8 \pm 0.1MHz$	

### Connections of Measurement Equipment

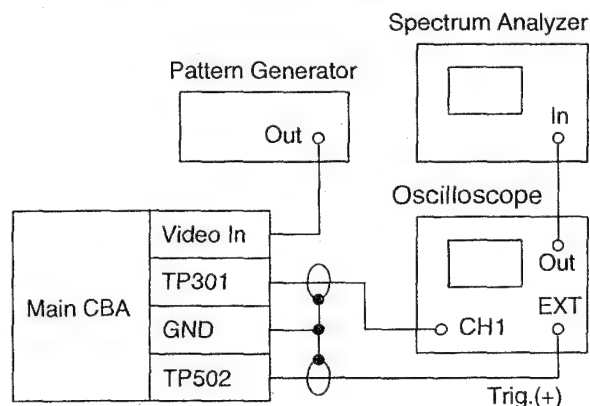
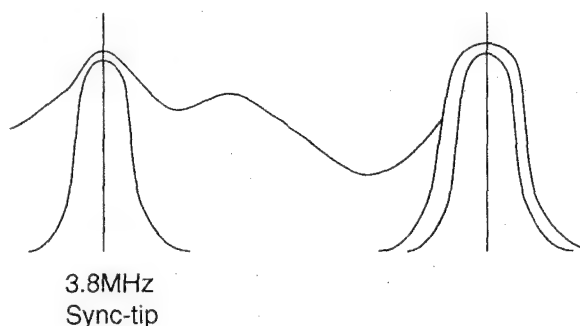


Figure 3



### Reference Notes:

TP301, TP502, VR302 : Main CBA

1. Input color bar signal with 100% white to video input.
2. Adjust Sync-tip to  $3.8MHz \pm 0.1MHz$  by VR302.

## 4. IF Unit Adjustment 1

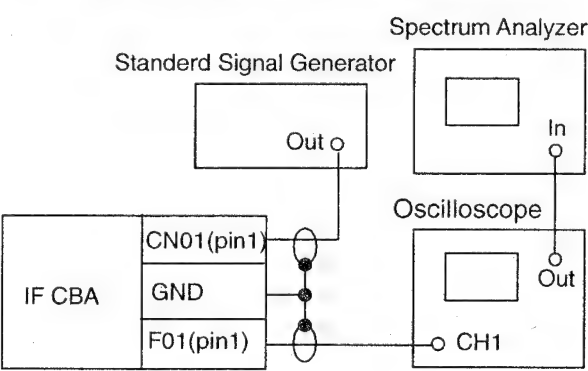
**Note:** Remove the IF unit from the Main CBA.

### 4-1. Adjacent Channel Trap Adjustment 1

**Purpose:** To comply IF for local radio wave regulation.

**Symptom of Misadjustment:** It may cause the noise in picture that audio IF may affect to video IF.  
If the frequency of trap overlap on video IF, IC input level will be lower and The S/N ratio will be lower.

Test Point	Adj. Point	Mode	Input
Pin1 of CN01 Pin1 of F01 (Saw Filter)	T05 (TRAP)	-----	40.4MHz (70dBμV sine wave)
Tape	Measurement Equipment	Spec.	
-----	Standard Signal Generator Oscilloscope Spectrum Analyzer	-----	

Connections of Measurement Equipment			
 <p>The diagram illustrates the setup for measuring the adjacent channel trap. It features three main components: a Standard Signal Generator, an IF CBA (Intermediate Frequency Circuit Board Assembly), and two measurement instruments, a Spectrum Analyzer and an Oscilloscope. The Standard Signal Generator's 'Out' terminal is connected to the 'CN01(pin1)' of the IF CBA. The IF CBA has three terminals: 'CN01(pin1)', 'GND', and 'F01(pin1)'. The 'GND' terminal is connected to the 'In' terminal of the Spectrum Analyzer. The 'F01(pin1)' terminal is connected to the 'CH1' input of the Oscilloscope. The Spectrum Analyzer and Oscilloscope are represented by rectangular boxes with internal symbols and labels for their respective input/output ports.</p>			

#### Reference Notes:

Pin1 of CN01, Pin1 of F01, T05 : IF CBA (IF unit)

1. Input Signal to Pin1 of CN01.
2. Adjust core of Coil T05 so that the waveform level becomes minimum.

### 4-2. Adjacent Channel Trap Adjustment2

**Purpose:** To comply IF for local radio wave regulation.

**Symptom of Misadjustment:** It may cause the noise in picture that audio IF may affect to video IF.  
If the frequency of trap overlap on video IF, IC input level will be lower and The S/N ratio will be lower.

Test Point	Adj. Point	Mode	Input
Pin1 of CN01 Pin1 of F01 (Saw Filter)	T05 (TRAP)	-----	31.9MHz (70dBμV sine wave)
Tape	Measurement Equipment	Spec.	
-----	Standard Signal Generator Oscilloscope Spectrum An- alyzer	-----	

Connections of Measurement Equipment			
<p>The diagram illustrates the setup for measuring the adjacent channel trap. It features three main components: a Standard Signal Generator, an IF CBA (Intermediate Frequency Circuit Assembly), and two measurement instruments, a Spectrum Analyzer and an Oscilloscope. The Standard Signal Generator's 'Out' terminal is connected to the 'CN01(pin1)' of the IF CBA. The 'GND' of the IF CBA is connected to the 'In' terminal of the Spectrum Analyzer. The 'F01(pin1)' of the IF CBA is connected to the 'CH1' input of the Oscilloscope. The IF CBA is represented as a vertical block with three terminals: 'CN01(pin1)', 'GND', and 'F01(pin1)'. The Standard Signal Generator is a rectangular block with an 'Out' terminal. The Spectrum Analyzer is a rectangular block with an 'In' terminal. The Oscilloscope is a rectangular block with an 'Out' terminal and a 'CH1' input.</p>			

#### Reference Notes:

Pin1 of CN01, Pin1 of F01, T06 : IF CBA (IF unit)

1. Input Signal to Pin1 of CN01.
2. Adjust core of Coil T06 so that the waveform level becomes minimum.

## 5. IF Unit Adjustment 2

**Note:** Install the IF unit on Main CBA.

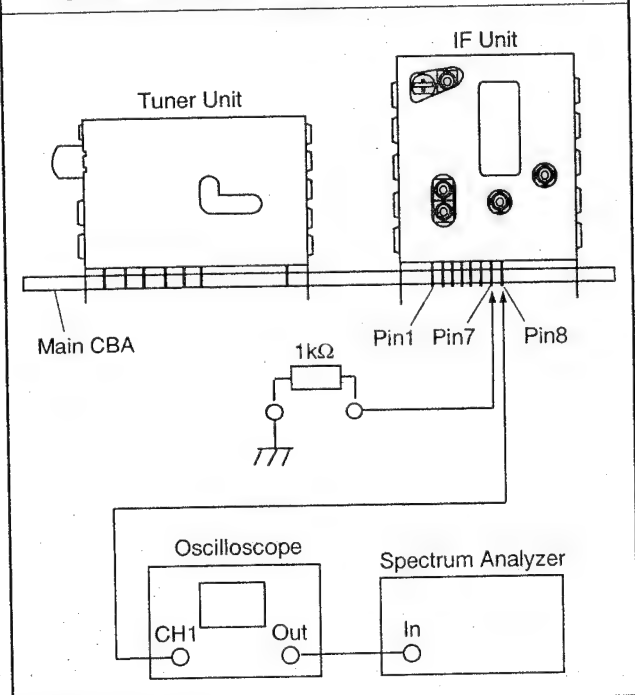
### 5-1. VCO Adjustment

**Purpose:** To adjust IF signal to optimum frequency.

**Symptom of Misadjustment:** Tuning will result unsynchronized

Test Point	Adj. Point	Mode	Input
Pin7 of CN01 Pin8 of CN01	T02 (VCO)	----	----
Tape	Measurement Equipment	Spec.	
----	Oscilloscope Spectrum Analyzer	----	

#### Connections of Measurement Equipment



#### Reference Notes:

Pin7 of CN01, Pin8 of CN01, T02 : IF CBA (IF Unit)

1. Connect 1kΩ(1/4W) Resistor between Pin7 of CN01 and GND line.

2. Adjust T02 (COIL) so that the VCO of the frequency becomes following value.

Alignment value= \*IF frequency  $\pm$  25kHz

\*IF frequency= 38.9MHz

**Note:** Set the range of Adjust Spectrum Analyzer 2MHz first for rough adjust then set to 50kHz for precise adjustment.

### 5-2. AFT Adjustment

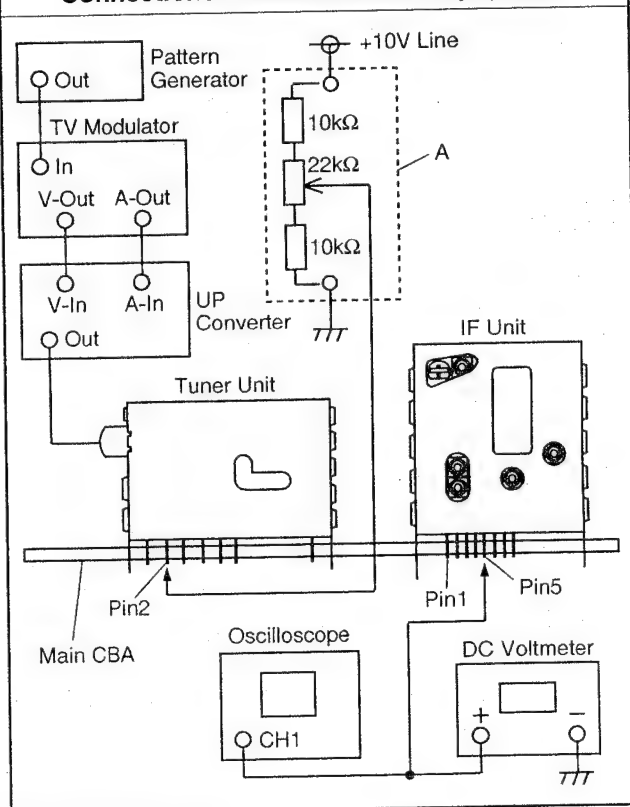
**Note:** Remove the R710(resistor) from the Main CBA.

**Purpose:** To adjust AFT effective rang which correct uncynchronized tuning after tuner preset.

**Symptom of Misadjustment:** May cause uncynchronized tuning after tuner preset.

Test Point	Adj. Point	Mode	Input
Pin5 of CN01 Pin2 of TU701	T03 (AFT)	----	Color Bar with 100% white
Tape	Measurement Equipment	Spec.	
----	TV modulator UP converter Pattern Generator Oscilloscope DC voltmeter	DC 2.5V $\pm$ 0.3V	

#### Connections of Measurement Equipment



#### Reference Notes:

Pin5 of CN01, T03 : IF CBA (IF Unit)

Pin2 of TU701 : Tuner unit

1. Make the service fixture shown in the above "A".

2. Adjust 22kΩ P.O.T. in the service fixture so that the tuner receives the following frequency.

\*Tuner reception frequency= 203.25MHz  
(VHF H range, VT= 5~6V)

\*Electric field strength: 70dBμV

\*IF frequency= 38.9MHz

3. Set the tuner in preset made and tuner to the above frequency.

4. Adjust core of Coil T03 so that the AFT voltage becomes  $DC\ 2.5V \pm 0.3V$ .

### 5-3. Audio distortion Adjustment

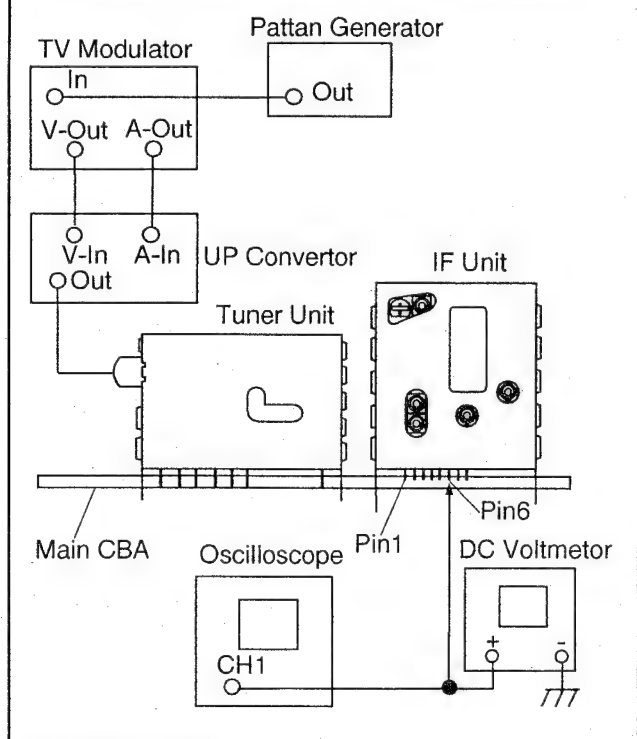
**Note:** Install the R710(resistor) in Main CBA.

**Purpose:** To minimize the audio distortion.

**Symptom of Misadjustment:** May cause audio distortion.

Test Point	Adj. Point	Mode	Input
Pin6 of CN01	T04 (DISTORTION)	----	Color Bar with 100% white
Tape	Measurement Equipment	Spec.	
----	Pattern Generator UP converter TV Modulator Oscilloscope Distortion meter	----	

#### Connections of Measurement Equipment



#### Reference Notes:

Pin6 of CN01, T04 : IF CBA (IF unit)

\*IF tuner unit of tuner reception condition:

Tuner input = 1kHz (Monaural)

1. Adjust core of Coil T04 so that the audio distortion becomes minimum level.

## 6. AGC Adjustment

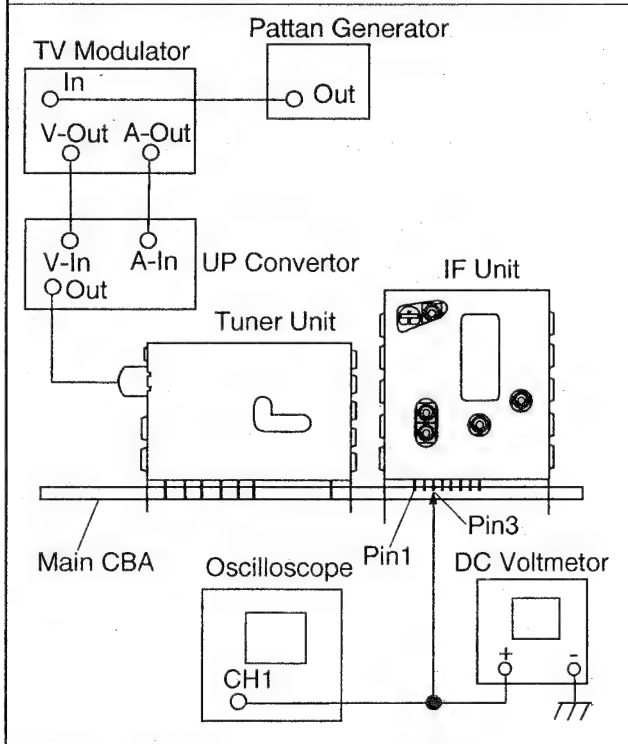
**Note:** Install the IF unit in Main CBA.

**Purpose:** To adjust the strength of received air signal.

**Symptom of Misadjustment:** May cause noise or beat in the picture.

Test Point	Adj. Point	Mode	Input
Pin3 of CN01	VR01 (AGC)	----	Color Bar with 100% white
Tape	Measurement Equipment	Spec.	
----	Standard Signal Generator Oscilloscope Spectrum Ana- lyzer DC Voltmeter	----	

#### Connections of Measurement Equipment



#### Reference Notes:

Pin3 of CN01, VR01 : IF CBA (IF unit)

\*IF tuner unit of Tuner reception condition:

Tuner input = 1kHz

1. Set the tuner in preset made and tuner to the above frequency.

\*Tuner reception frequency= 203.25MHz (VHF H range)

\*Electric field strength: 70dBμV

2. Adjust VR01 so that the voltage of AGC becomes the following level.

\*DC voltmeter level=DC 4.0V±0.2V

## BLOCK DIAGRAMS

MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D

The schematic diagram illustrates the electrical connections for a VCR, organized into several functional blocks:

- DECK MECHANISM:** Includes the DRUM MOTOR, ACE HEAD CBA, JOINT CBA, MODE SW CBA, and CAPSTAN MOTOR. It features connectors CN3801, CN3801, CN301, CN2693, CL2692, CL2691, and CN2692.
- HEAD AMP CBA:** Contains IC503(1/2), IC503(2/2), and IC503(3/3) op-amp stages, along with IC502(1/3), IC502(2/3), and IC502(3/3) op-amp stages. It also includes a D501 LED and a V-REF pin.
- MAIN CBA:** The central processing unit, featuring IC504A and IC504B control logic, IC505 SCL, and various control pins like REC-CTL, PB-CTL, D-CONT, C-CONT, C-FG, LM-FWD, LM-REV, ST-S, END-S, REEL, LD-C, LD-A, LD-B, LD-D, C-DRIVE, RESET, and C-F/R.
- SERVO/SYSTEM CONTROL:** Manages power and timing, including VR501 SW-POINT, PS501 REMOTE SENSOR, TP504 GND, TP503 SENSINH, KEY IN-1, KEY IN-2, KEY SWITCH, SW501 CH UP, FP501, IF701 (IF CBA), TU701, and various timing and control pins like PG DELAY/TEST, REMOCON, KEY IN-1, KEY IN-2, KEY SWITCH, SW501 CH UP, FP501, IF701 (IF CBA), TU701, and various timing and control pins like PG DELAY/TEST, REMOCON, KEY IN-1, KEY IN-2, KEY SWITCH, SW501 CH UP, FP501, IF701 (IF CBA), TU701.
- FUNCTION CBA:** Includes KEY SWITCH, KEY 1, KEY 2, and KEY SWITCH.
- Other Components:** Includes various capacitors (C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100), resistors (R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100), and other components like Q501, Q502, Q503, Q504, Q505, Q506, Q507, Q508, Q509, Q510, Q511, Q512, Q513, Q514, Q515, Q516, Q517, Q518, Q519, Q520, Q521, Q522, Q523, Q524, Q525, Q526, Q527, Q528, Q529, Q530, Q531, Q532, Q533, Q534, Q535, Q536, Q537, Q538, Q539, Q540, Q541, Q542, Q543, Q544, Q545, Q546, Q547, Q548, Q549, Q550, Q551, Q552, Q553, Q554, Q555, Q556, Q557, Q558, Q559, Q560, Q561, Q562, Q563, Q564, Q565, Q566, Q567, Q568, Q569, Q570, Q571, Q572, Q573, Q574, Q575, Q576, Q577, Q578, Q579, Q580, Q581, Q582, Q583, Q584, Q585, Q586, Q587, Q588, Q589, Q590, Q591, Q592, Q593, Q594, Q595, Q596, Q597, Q598, Q599, Q600, Q601, Q602, Q603, Q604, Q605, Q606, Q607, Q608, Q609, Q610, Q611, Q612, Q613, Q614, Q615, Q616, Q617, Q618, Q619, Q620, Q621, Q622, Q623, Q624, Q625, Q626, Q627, Q628, Q629, Q630, Q631, Q632, Q633, Q634, Q635, Q636, Q637, Q638, Q639, Q640, Q641, Q642, Q643, Q644, Q645, Q646, Q647, Q648, Q649, Q650, Q651, Q652, Q653, Q654, Q655, Q656, Q657, Q658, Q659, Q660, Q661, Q662, Q663, Q664, Q665, Q666, Q667, Q668, Q669, Q670, Q671, Q672, Q673, Q674, Q675, Q676, Q677, Q678, Q679, Q680, Q681, Q682, Q683, Q684, Q685, Q686, Q687, Q688, Q689, Q690, Q691, Q692, Q693, Q694, Q695, Q696, Q697, Q698, Q699, Q700, Q701, Q702, Q703, Q704, Q705, Q706, Q707, Q708, Q709, Q710, Q711, Q712, Q713, Q714, Q715, Q716, Q717, Q718, Q719, Q720, Q721, Q722, Q723, Q724, Q725, Q726, Q727, Q728, Q729, Q730, Q731, Q732, Q733, Q734, Q735, Q736, Q737, Q738, Q739, Q740, Q741, Q742, Q743, Q744, Q745, Q746, Q747, Q748, Q749, Q750, Q751, Q752, Q753, Q754, Q755, Q756, Q757, Q758, Q759, Q760, Q761, Q762, Q763, Q764, Q765, Q766, Q767, Q768, Q769, Q770, Q771, Q772, Q773, Q774, Q775, Q776, Q777, Q778, Q779, Q780, Q781, Q782, Q783, Q784, Q785, Q786, Q787, Q788, Q789, Q790, Q791, Q792, Q793, Q794, Q795, Q796, Q797, Q798, Q799, Q800, Q801, Q802, Q803, Q804, Q805, Q806, Q807, Q808, Q809, Q810, Q811, Q812, Q813, Q814, Q815, Q816, Q817, Q818, Q819, Q820, Q821, Q822, Q823, Q824, Q825, Q826, Q827, Q828, Q829, Q830, Q831, Q832, Q833, Q834, Q835, Q836, Q837, Q838, Q839, Q840, Q841, Q842, Q843, Q844, Q845, Q846, Q847, Q848, Q849, Q850, Q851, Q852, Q853, Q854, Q855, Q856, Q857, Q858, Q859, Q860, Q861, Q862, Q863, Q864, Q865, Q866, Q867, Q868, Q869, Q870, Q871, Q872, Q873, Q874, Q875, Q876, Q877, Q878, Q879, Q880, Q881, Q882, Q883, Q884, Q885, Q886, Q887, Q888, Q889, Q890, Q891, Q892, Q893, Q894, Q895, Q896, Q897, Q898, Q899, Q900, Q901, Q902, Q903, Q904, Q905, Q906, Q907, Q908, Q909, Q910, Q911, Q912, Q913, Q914, Q915, Q916, Q917, Q918, Q919, Q920, Q921, Q922, Q923, Q924, Q925, Q926, Q927, Q928, Q929, Q930, Q931, Q932, Q933, Q934, Q935, Q936, Q937, Q938, Q939, Q940, Q941, Q942, Q943, Q944, Q945, Q946, Q947, Q948, Q949, Q950, Q951, Q952, Q953, Q954, Q955, Q956, Q957, Q958, Q959, Q960, Q961, Q962, Q963, Q964, Q965, Q966, Q967, Q968, Q969, Q970, Q971, Q972, Q973, Q974, Q975, Q976, Q977, Q978, Q979, Q980, Q981, Q982, Q983, Q984, Q985, Q986, Q987, Q988, Q989, Q990, Q991, Q992, Q993, Q994, Q995, Q996, Q997, Q998, Q999, Q1000, Q1001, Q1002, Q1003, Q1004, Q1005, Q1006, Q1007, Q1008, Q1009, Q1010, Q1011, Q1012, Q1013, Q1014, Q1015, Q1016, Q1017, Q1018, Q1019, Q1020, Q1021, Q1022, Q1023, Q1024, Q1025, Q1026, Q1027, Q1028, Q1029, Q1030, Q1031, Q1032, Q1033, Q1034, Q1035, Q1036



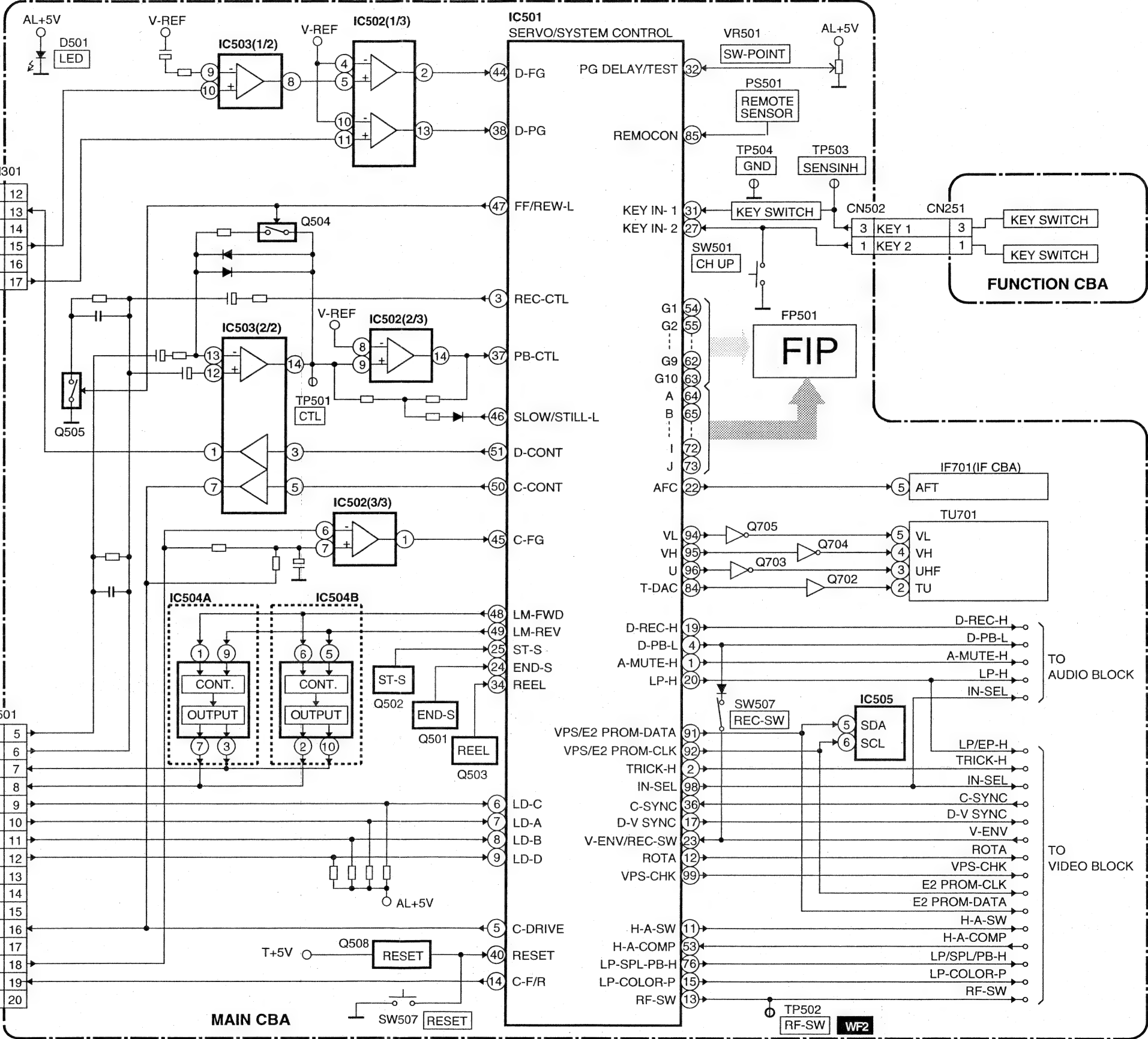
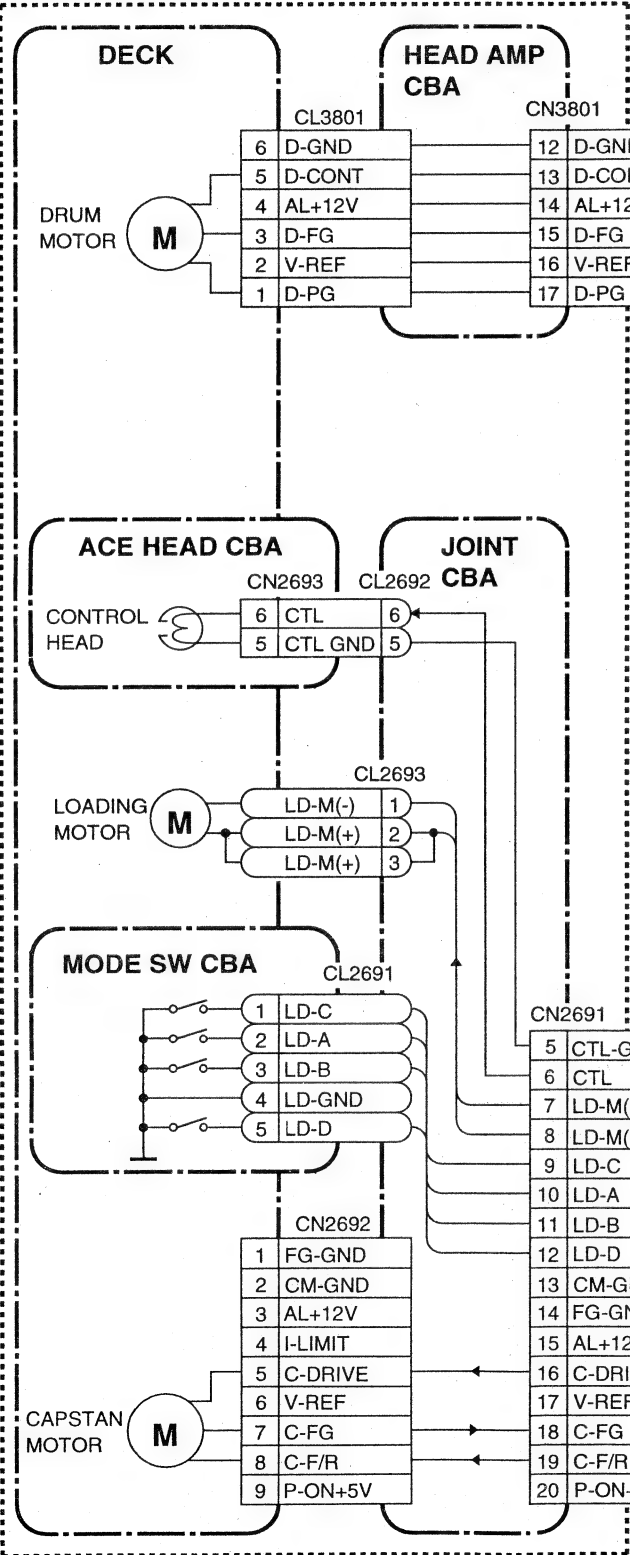
Servo/System Control Block Diagram (C, D)

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D

NOTE: THE LOADING MOTOR DRIVE IC IS EITHER IC504A(TA7291S) OR IC504B(LB1641).  
THESE ICs ARE EXCHANGEABLE PARTS.

DECK MECHANISM

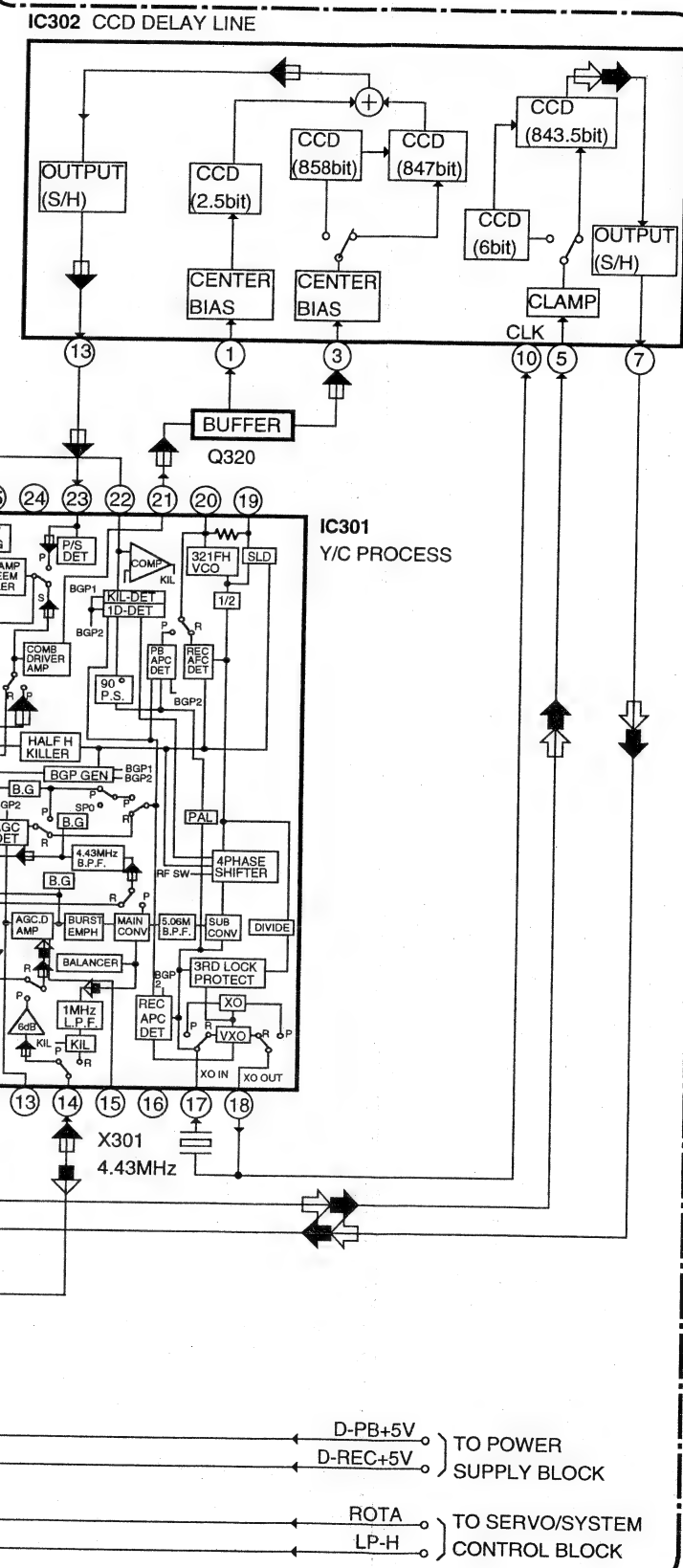


The diagram illustrates the internal circuitry of a VCR, organized into several functional sections:

- MAIN CBA (Main Control Block):** The central hub for video processing. It includes an **IC751 INPUT SELECT** which routes signals from **VIDEO-IN** (MD701), **IF701 (IF CBA)**, or **V-IN** (via JK751) to the rest of the system. It also handles **REC-Y**, **REC-C**, and **PB-Y** signals. A **WF1 TP7501 V-OUT** is connected to the main video line. A **Q308 BUFFER** is used for the **TO SERVO/SYSTEM CONTROL BLOCK** signals, which include **C-SYNC**, **D-V**, and **LP-SPL-PB-H**. A **Q307** switch is also shown.
- VPS CBA (Video Positioning System Control Block):** Two versions are shown, both using **IC5101** (either SAA4700 or SDA5642). They interface with **CVBS**, **SEL**, and **SDA** signals. Their outputs (**V-IN**, **VPS-CLK**, **VPS-DATA**) are sent to the **MAIN CBA** and the **DECK MECHANISM**.
- DECK MECHANISM:** Contains the **HEAD AMP CBA** with **IC3801 HEAD AMP**. It interfaces with the **DECK** via **CN3802** (V(L), V-COM, V(R), V-COM) and **CN3801** (V-ENV, RF-SW, Y-PB, C-PB, Y/C REC). It also includes an **ENV DET** and **AGC DET** circuit.
- Processing and Output Section:** This section includes **VR301 E-E LEVEL**, **VR302 CAB/DEV**, and **Q302 Q303 EQUALIZER/PEAKING**. The video signal passes through a **Q301 BUFFER** and a **TP301 Y-REC** point. A **TP303 C-REC** and **TP302 C-PB** are also indicated. A **B.P.F.** (Band Pass Filter) is used for the **WF5** signal. The final output is taken from **Q310** and **Q311**, with a **Q312** switch for **AL+5V** connection.
- Other Components:** Various transistors (**Q506**, **Q507**, **Q309**, **Q311**, **Q312**) and diodes are used throughout the circuit for signal conditioning and switching. A **Q309** transistor is specifically labeled as **Q309** in the diagram.

The diagram is a complex representation of the VCR's internal electronics, showing the flow of video and control signals between these various integrated circuits and discrete components.

MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D



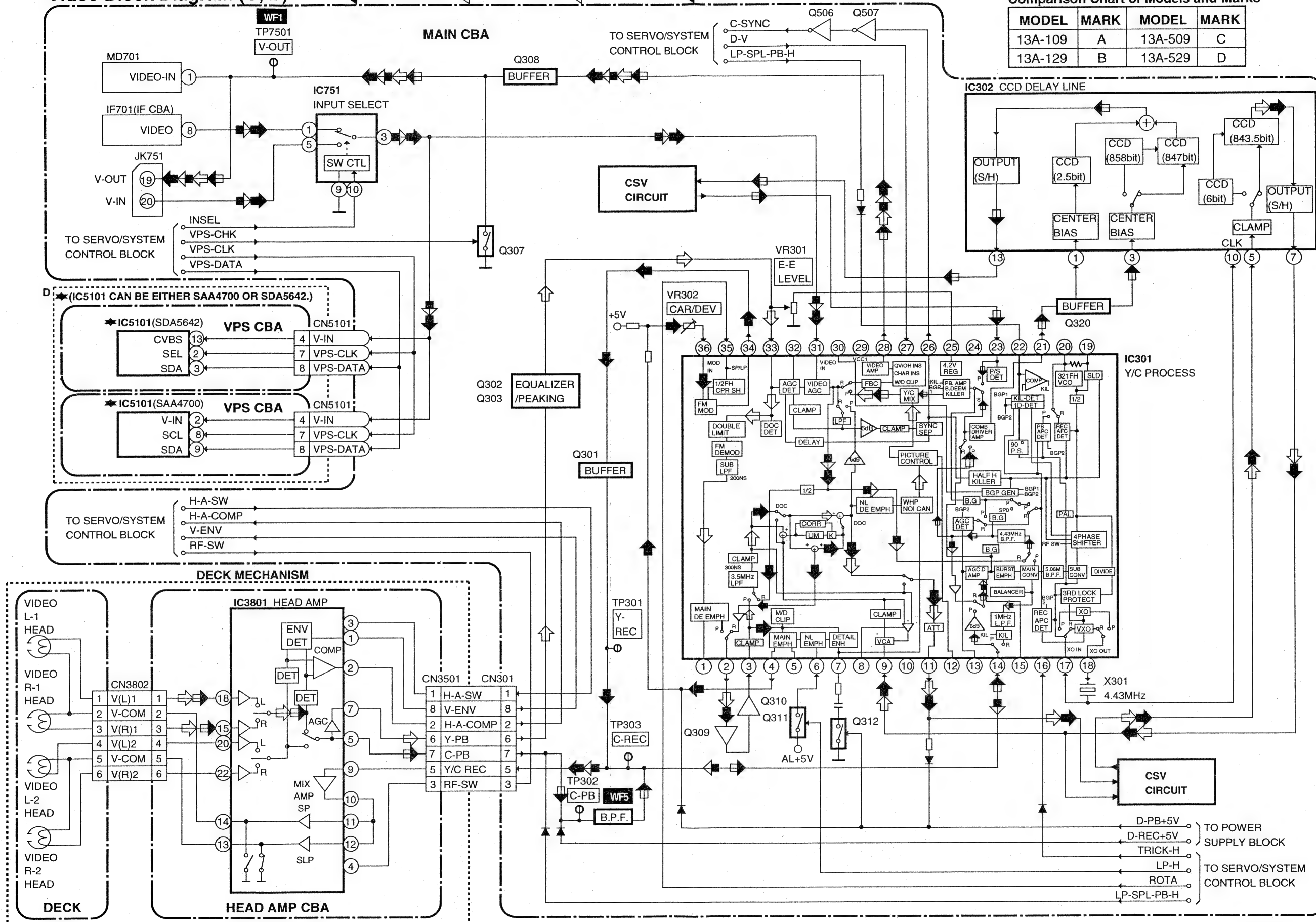
# Video Block Diagram (C, D)

REC-Y SIGNAL REC-C SIGNAL PB-Y SIGNAL PB-C SIGNAL

Mode : SP/REC

## Comparison Chart of Models and Marks

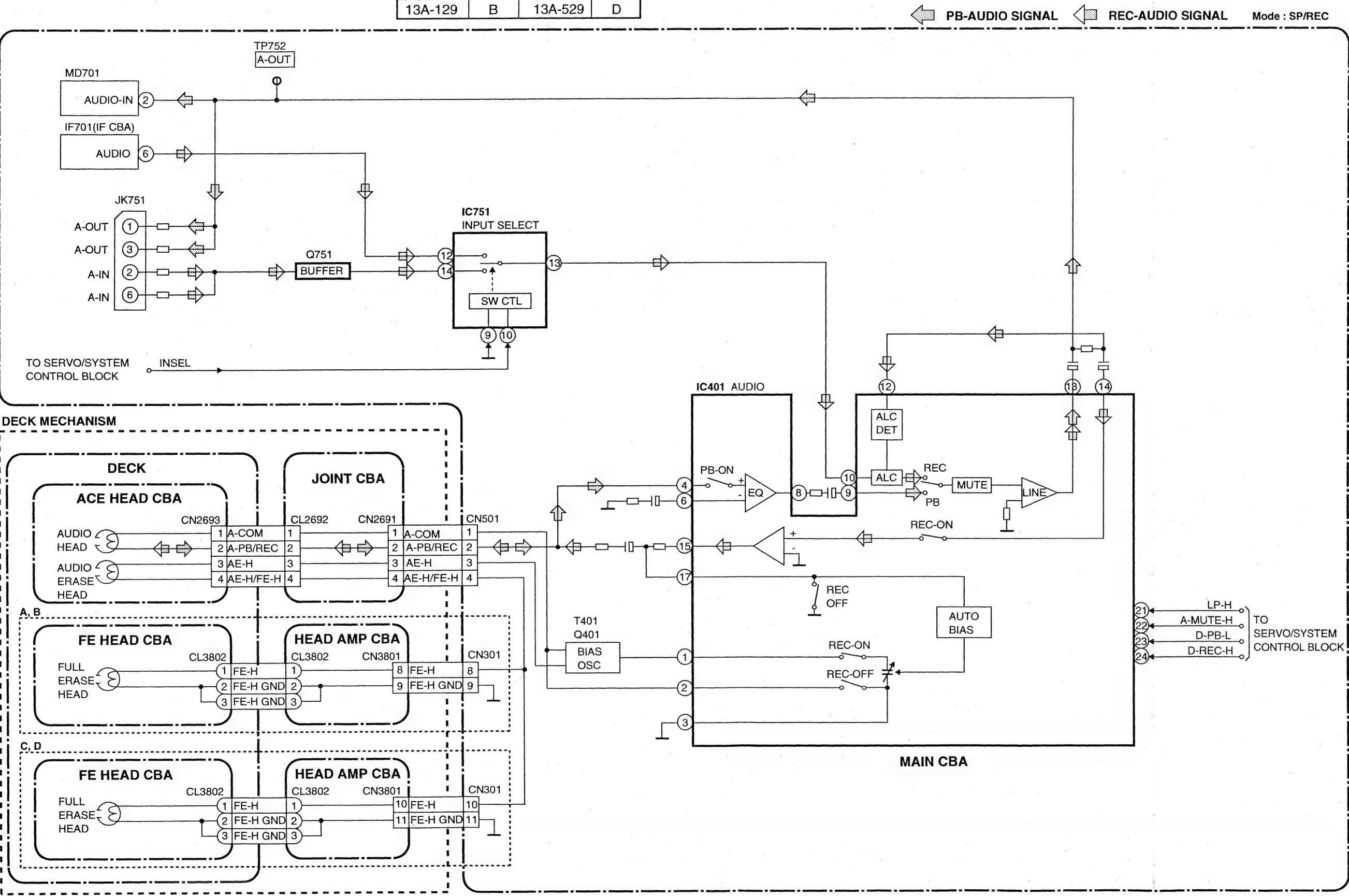
MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D



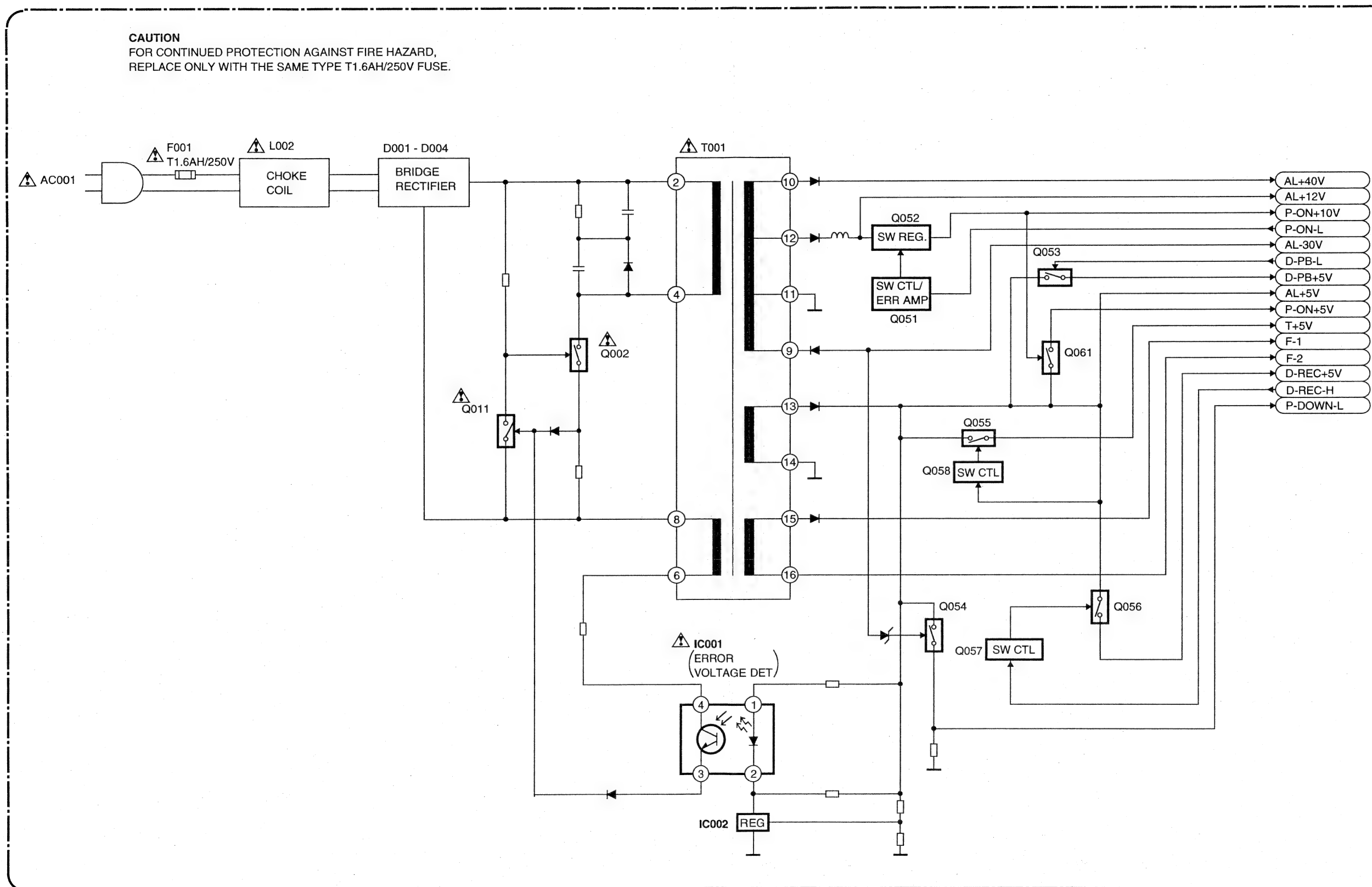
Audio Block Diagram

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D



### Power Supply Block Diagram





# SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

## Standard Notes

### WARNING

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark "  $\triangle$  " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

### Capacitor Temperature Markings

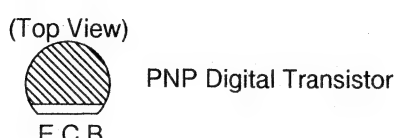
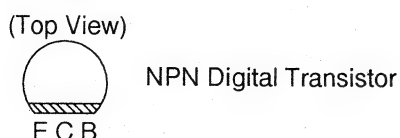
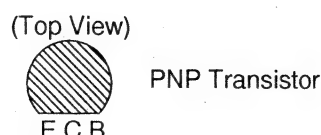
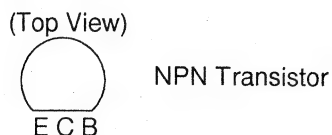
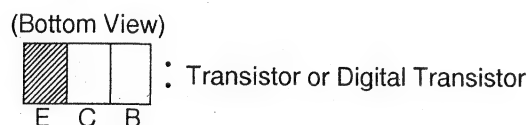
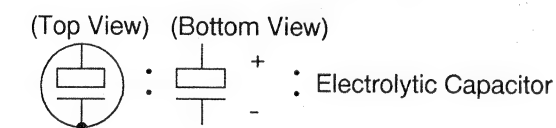
Mark	Capacity change rate	Standard temperature	Temperature range
(B)	$\pm 10\%$	20°C	-25~+85°C
(F)	+30 -80%	20°C	-25~+85°C
(SR)	$\pm 15\%$	20°C	-25~+85°C
(Z)	+30 -80%	20°C	-10~+70°C

### Note:

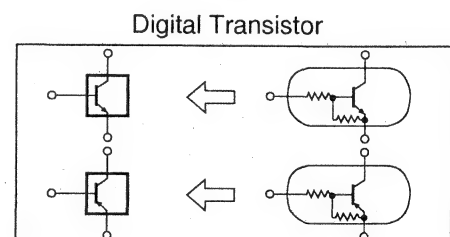
- 1 Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
- 2 All resistance values are indicated in ohms ( $K=10^3$ ,  $M=10^6$ ).
- 3 Resistor wattages are 1/5W or 1/6W unless otherwise specified.
- 4 All capacitance values are indicated in  $\mu F$  ( $P=10^{-6}\mu F$ ).
- 5 All voltages are DC voltages unless otherwise specified.
- 6 Electrical parts such as capacitors, connectors, diodes, IC's, transistors, resistors, switches, and fuses are identified by four digits. The first two digits are not shown for each component. In each block of the diagram, there is a note such as shown below to indicate these abbreviated two digits.

Capacitors and transistors are represented by the following symbols.

### CBA Symbols



### Schematic Diagram Symbols



## LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

### 1. CAUTION:

FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.

### 2. CAUTION:

Fixed Voltage power supply circuit is used in this unit.

If Main Fuse (F01) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

### 3. Note:

(1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.

(2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

### 4. Wire Connectors

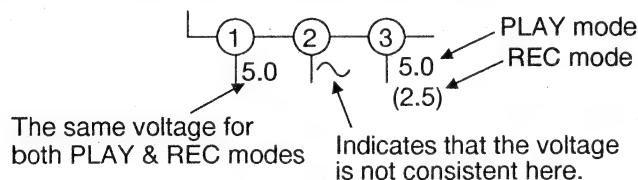
(1) Prefix symbol "CN" means "connector." (Can disconnect and reconnect)

(2) Prefix symbol "CL" means "wire-solder holes of the PCB." (Wire is soldered directly.)

5. Note: Mark "•" is a leadless (chip) component.

6. Mode: SP/REC

7. Voltage indications for PLAY and REC modes on the Schematics are as shown below:

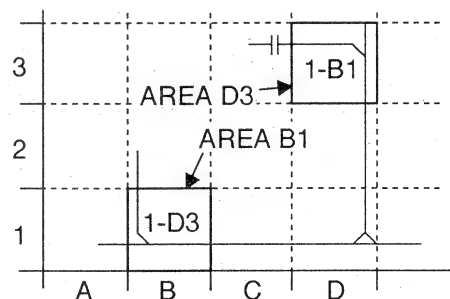


Unit: Volts

### 8. How to read converged lines

1-D3  
↑  
Distinction Area  
Line Number  
(1 to 3 digits)  
Examples:

1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".

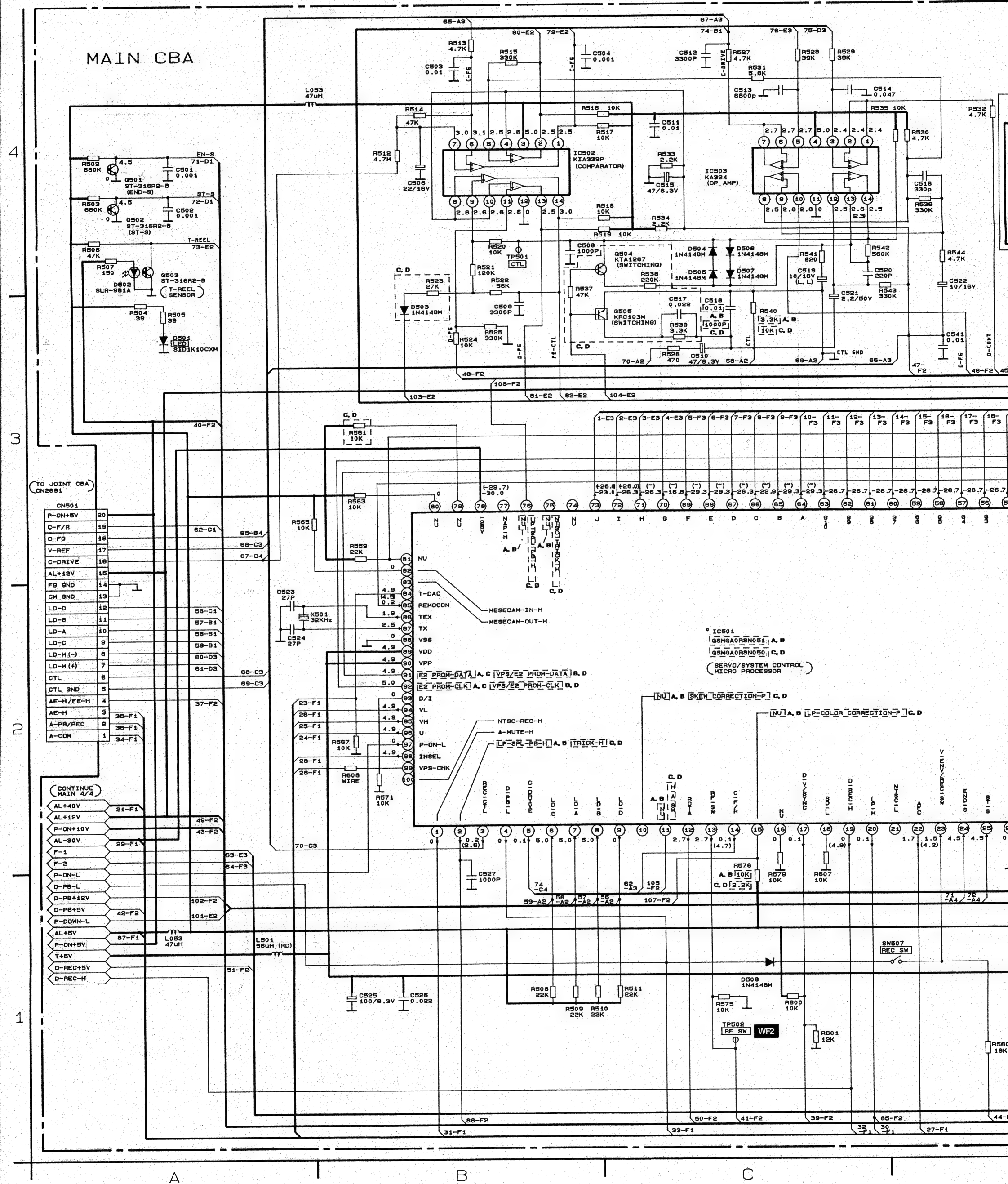


### 9. Test Point Information

- ⊙ : Indicates a test point with a jumper wire across a hole in the PCB.
- : Used to indicate a test point with a component lead on foil side.
- ⊗ : Used to indicate a test point with no test pin.
- : Used to indicate a test point with a test pin.

### Main 1/4 Schematic Diagram

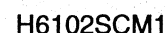
Note: The loading motor drive IC is either type A or type B. These two types are exchangeable and can be equated and used whichever the model is. The difference between type A and type B is shown in the table below.





	IC504A	IC504B	C530
Type A	TA7291S	Not Used	Not Used
Type B	Not Used	LB1641	Used

MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D



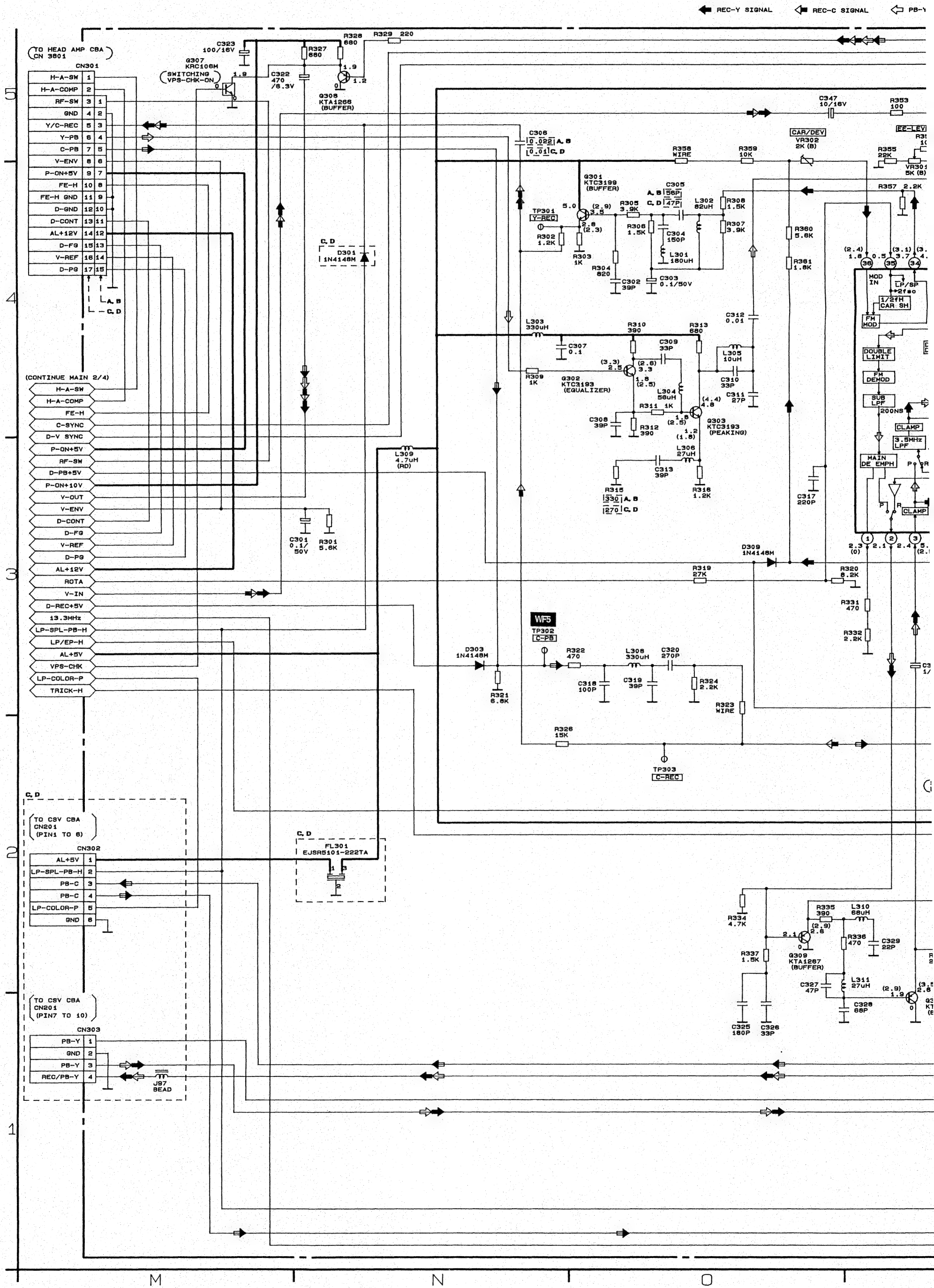




MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D

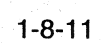


## Main 3/4 Schematic Diagram





MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D

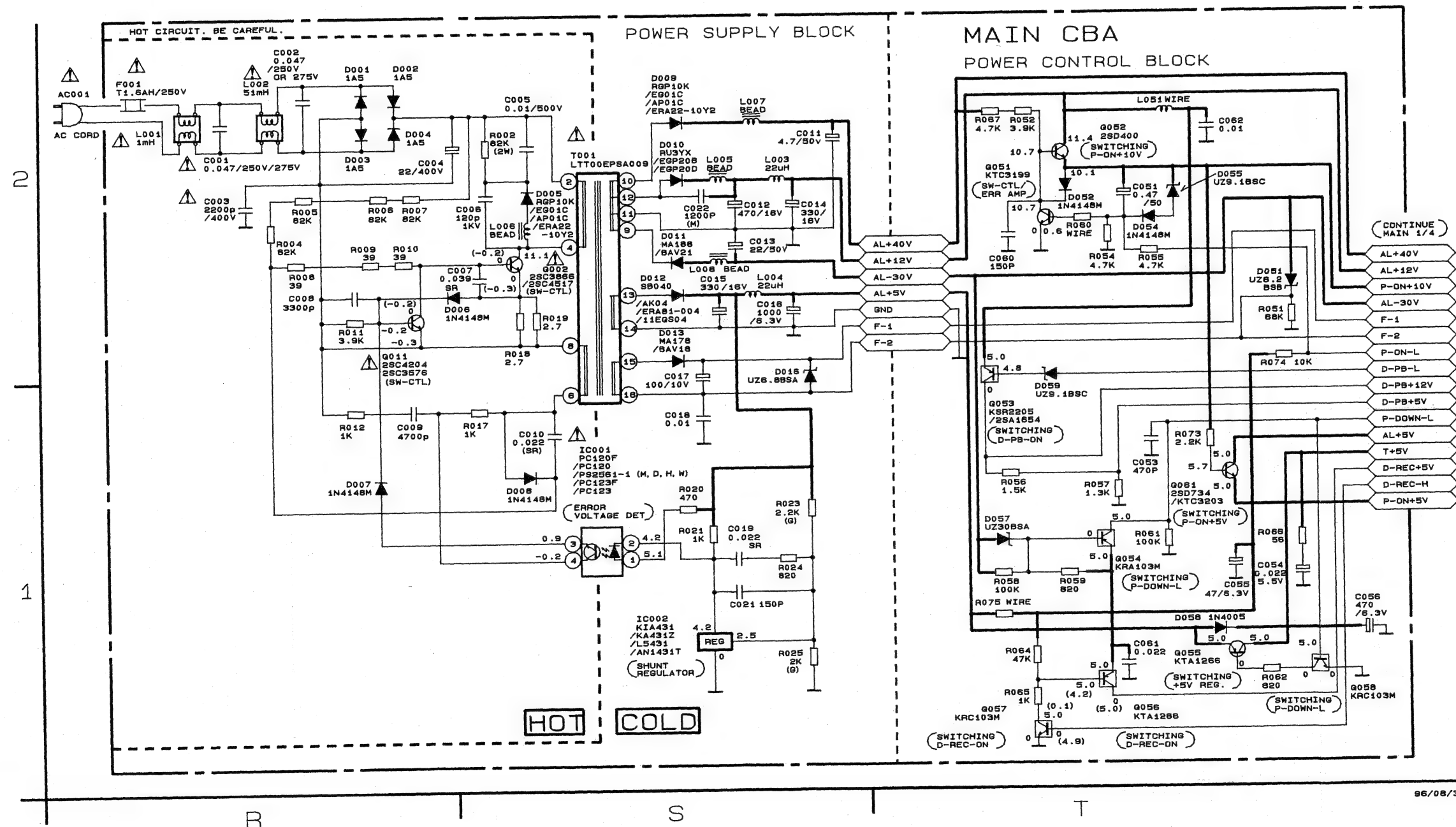


# Main 4/4 Schematic Diagram

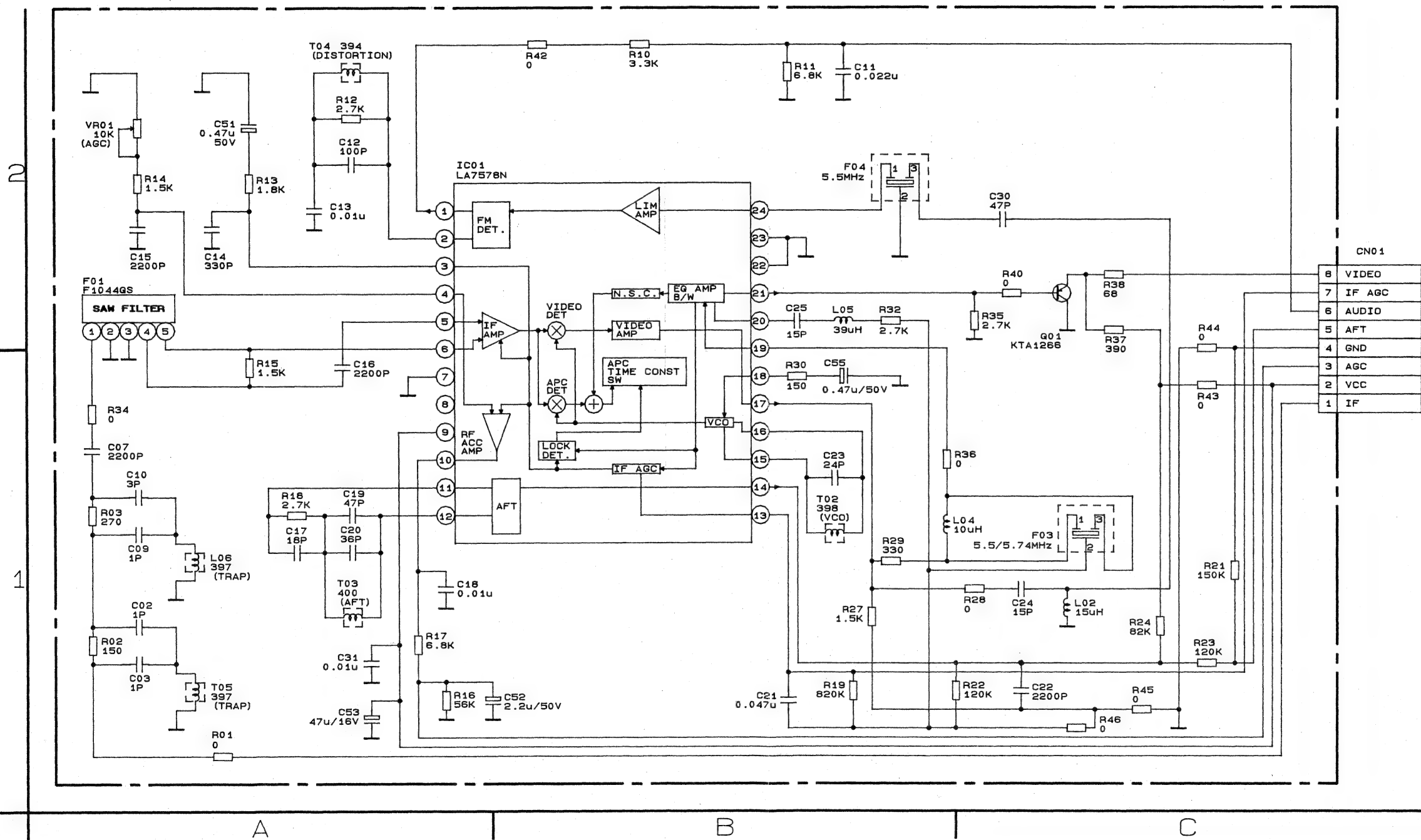
**CAUTION**  
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,  
REPLACE ONLY WITH THE SAME TYPE FUSE.

**NOTE:**  
THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING  
HOT GND AS A COMMON TERMINAL.

**CAUTION !**  
Fixed voltage power supply circuit is used in this unit.  
If Main Fuse (F01) is blown, check to see that all components in the power supply  
circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some components in the power supply circuit to fail.



IF Schematic Diagram



CSV CBA

(TO MAIN CBA)  
CN302, CN303

CN201

AL+5V	1
LP-SPL-PB-H	2
PB-C	3
PB-C	4
LP-COLOR-P	5
GND	6
PB-Y	7
GND	8
PB-Y	9
REC/PB-Y	10

R206 22K

R201 1.2K

C209 1000P

R202 680

C202 2200P

Q201 KRA109M (SWITCHING)

C201 33P

Q203 KTC3199 (BUFFER)

R204 2.2K

R203 1K

Q202 KTA1267 (BUFFER)

R208 1.2K

C207 2200P

D201 1N4148M

Q205 KTC3193 (SWITCHING)

R207 22K

Q204 KTA1267 (SWITCHING)

R209 100

C205 2200P

R210 1.5K

R205 1K

C204 2200P

C203 15P

L201 68uH

C206 68P

L202 15uH

MODE: REC/SP

REC-Y SIGNAL    REC-C SIGNAL    PB-Y SIGNAL    PB-C SIGNAL

(TO MAIN CBA CN301)

CN3801

15	D-PG
14	V-REF
13	D-FG
12	AL+12V
11	D-CONT
10	D-GND
9	FE-H GND
8	FE-H
7	AL+5V
6	V-ENV
5	C-PB
4	Y-PB
3	Y/C-REC
2	GND
1	RF-SW

C3822 47P

L3801 22uH

C3801 0.1

C3802 100/6.3V

CL3801

1	D-PG
2	V-REF
3	D-FG
4	AL+12V
5	D-CONT
6	D-GND

(TO DRUM MOTOR)

CL3802

3	FE-H GND
2	FE-H GND
1	FE-H

CL3802

3	FE-H GND
2	FE-H GND
1	FE-H

FULL ERASE HEAD

FE HEAD CBA

IC3801 LA7376  
(VIDEO HEAD AMP)

R3801 22K

C3821 100P

R3802 8.2K

C3804 0.01

C3803 0.22 /50V

R3803 1K

C3805 0.01

R3804 5.6K

C3806 0.01

R3805 33K

C3807 0.1 (F)

C3809 0.1 (F)

CN3802

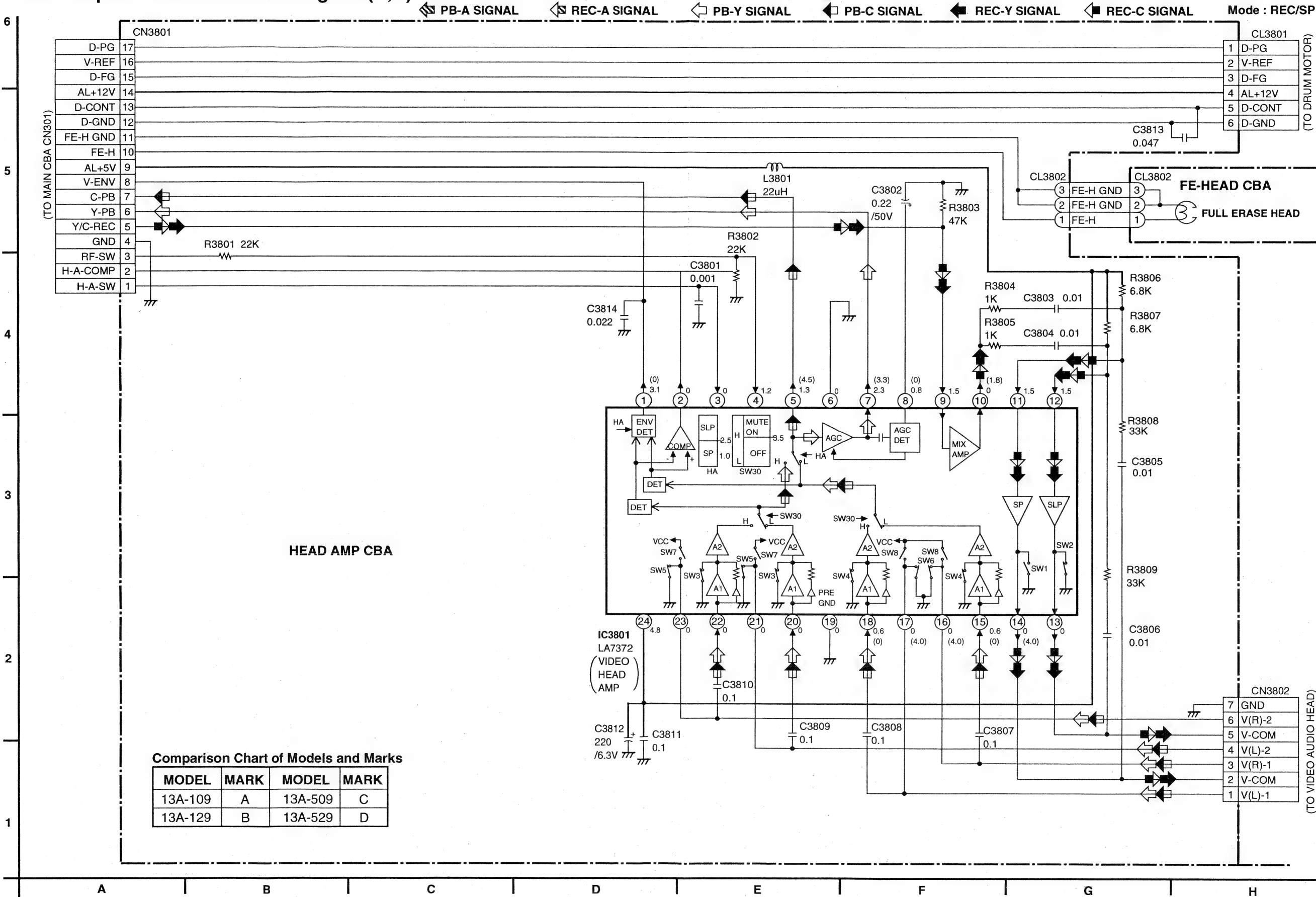
5	GND
4	V(L)
3	V-COM
2	V(R)
1	V-COM

(TO VIDEO HEAD)

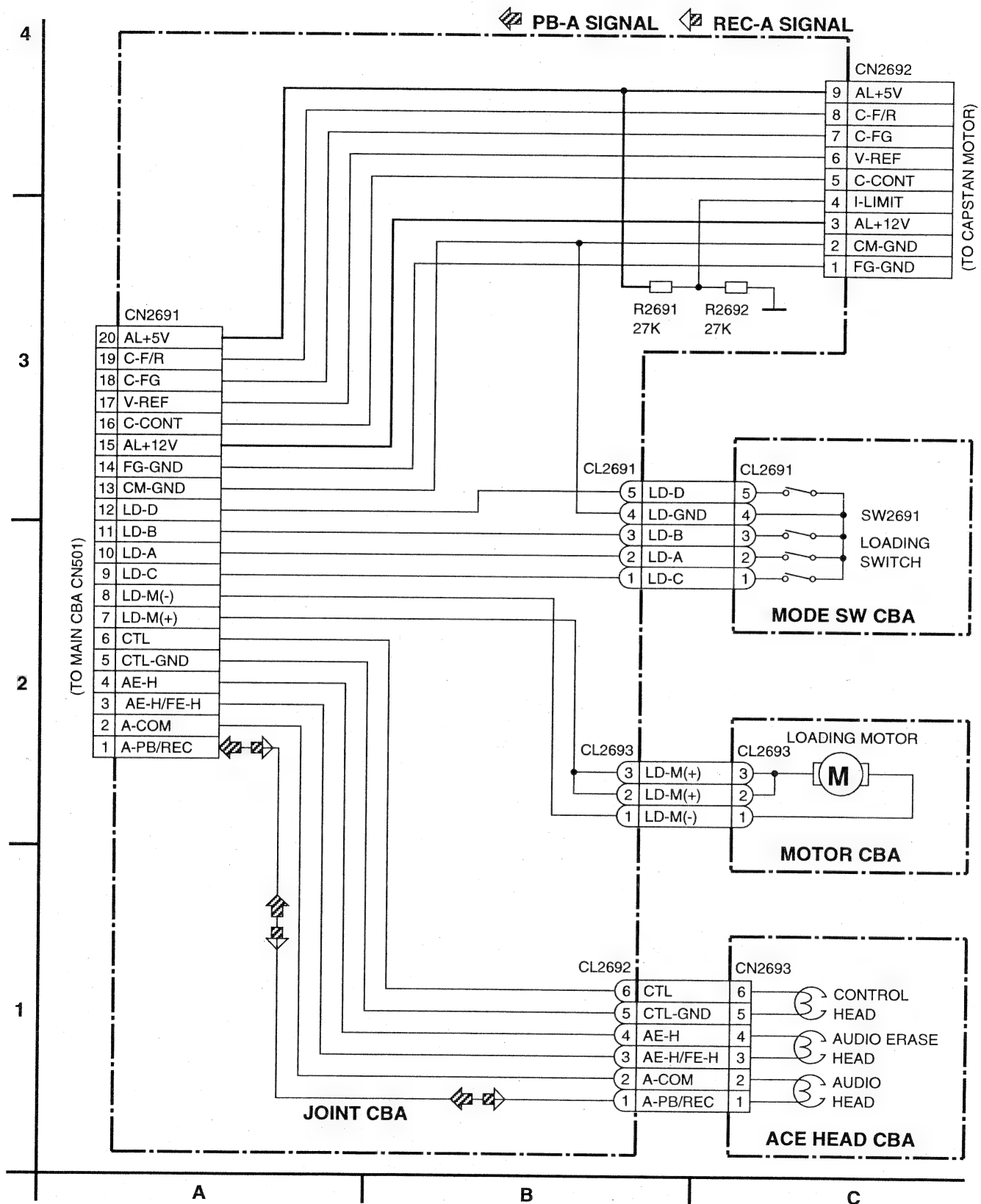
A B C



Head Amp/FE-Head Schematic Diagram (C,D)



# Joint/Mode Sw/Ace Head/Motor Schematic Diagram



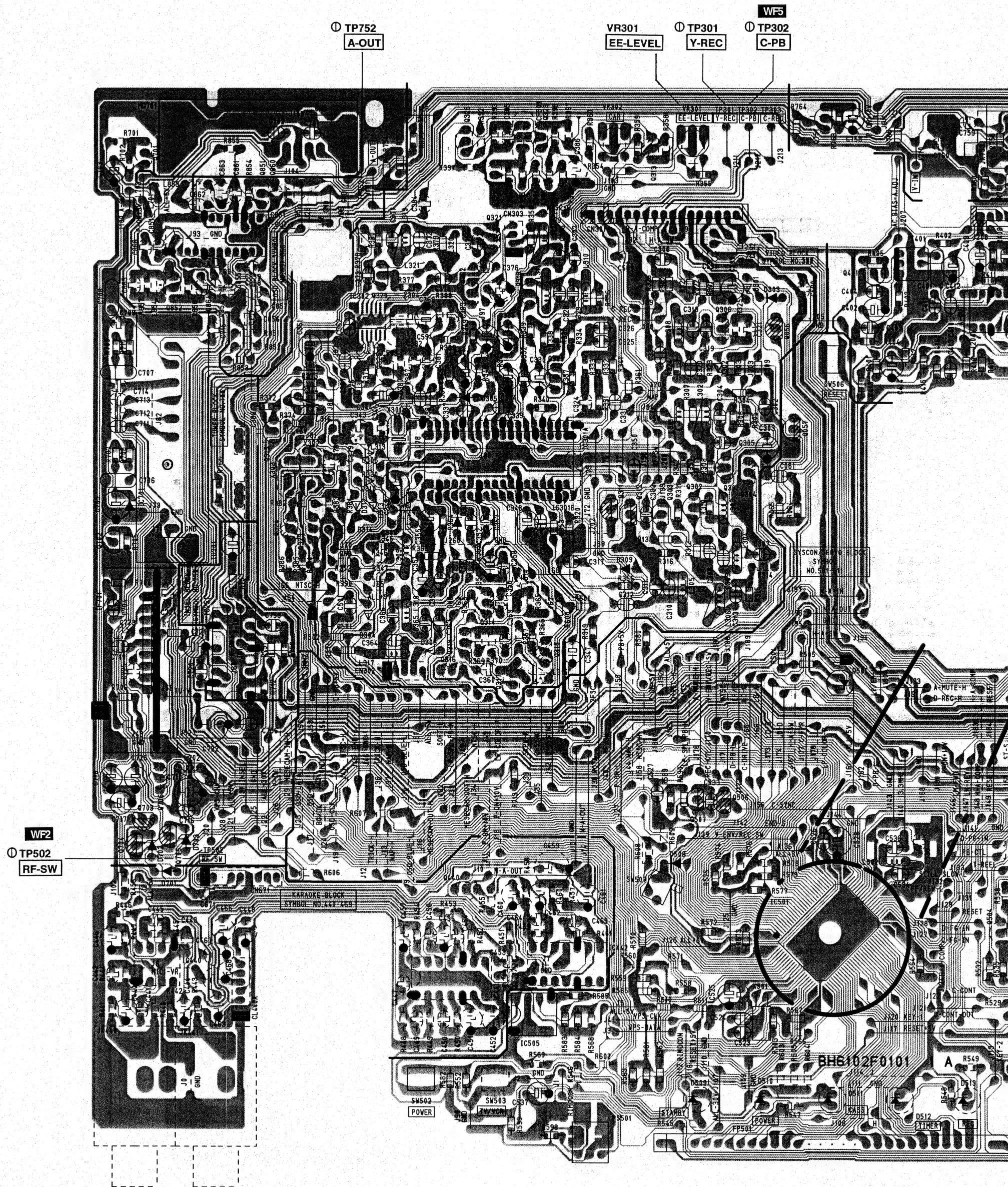


Main CBA Top View  
(CBA NO. : BH6102F01011A)

NOTE:  
The models covered by this manual employ two exchangeable Main CBAs which have the same parts but have patterns the are slightly different. (One of these two CBAs was provided to improve the production efficiency.) These CBAs can be identified by their CBA numbers that are screened on the lower left-hand conner of the top side. This number reads BH6102F0101 on the bottom line. Screened on top of this line is 1A or 2A, the last segment of the CBA number. when servicing, confirm this number of your unit to see which CBA you should refer to, BH6102F01011A below on these pages or BH6102F01012A following.

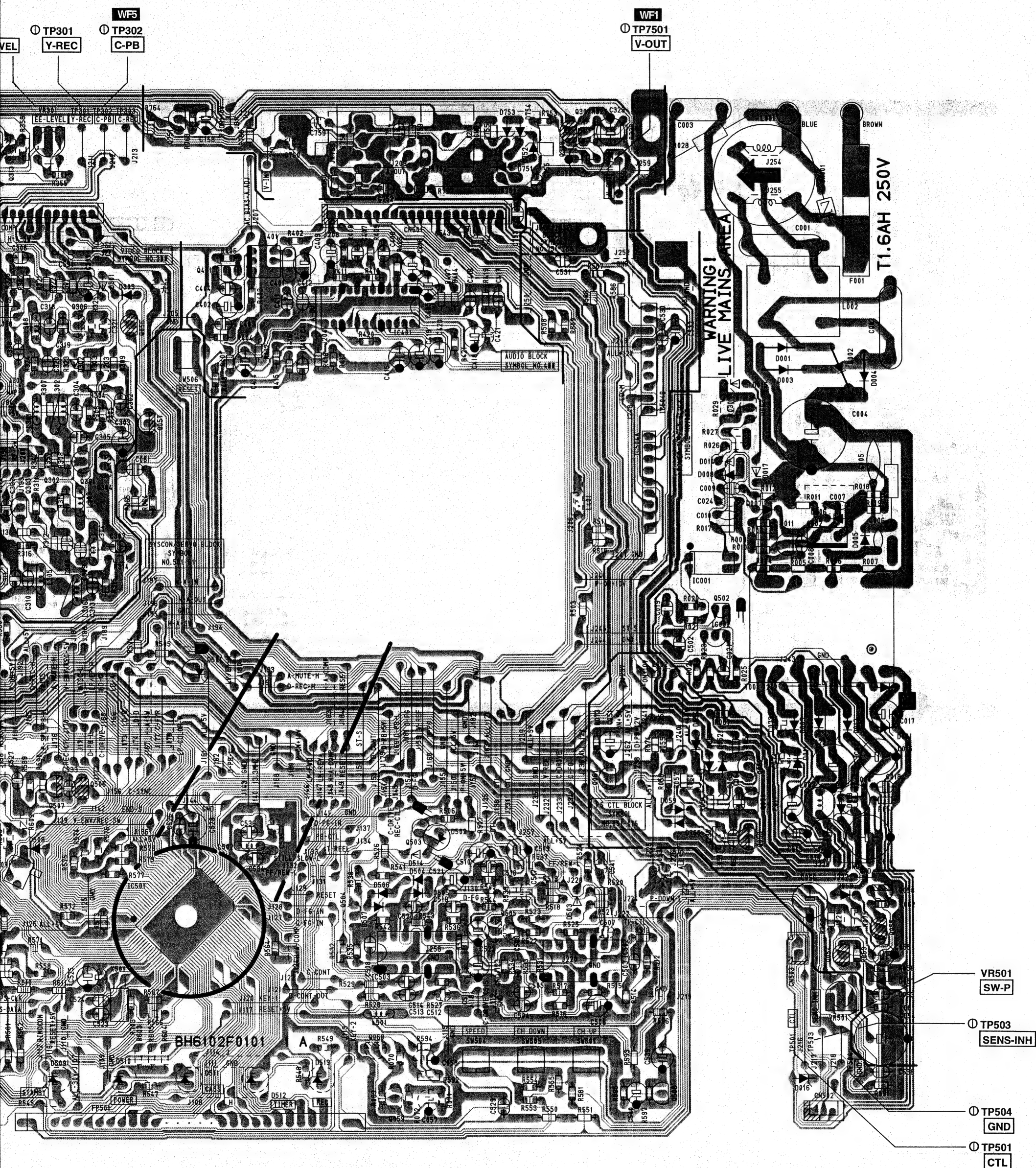
NOTE :  
THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING  
HOT GND AS A COMMON TERMINAL.

CAUTION  
FOR CONTINUED PROTECTION  
REPLACE ONLY WITH T





**CAUTION:** Fixed or auto voltage power supply circuit is used in this unit.  
If Main Fuse (F01) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.



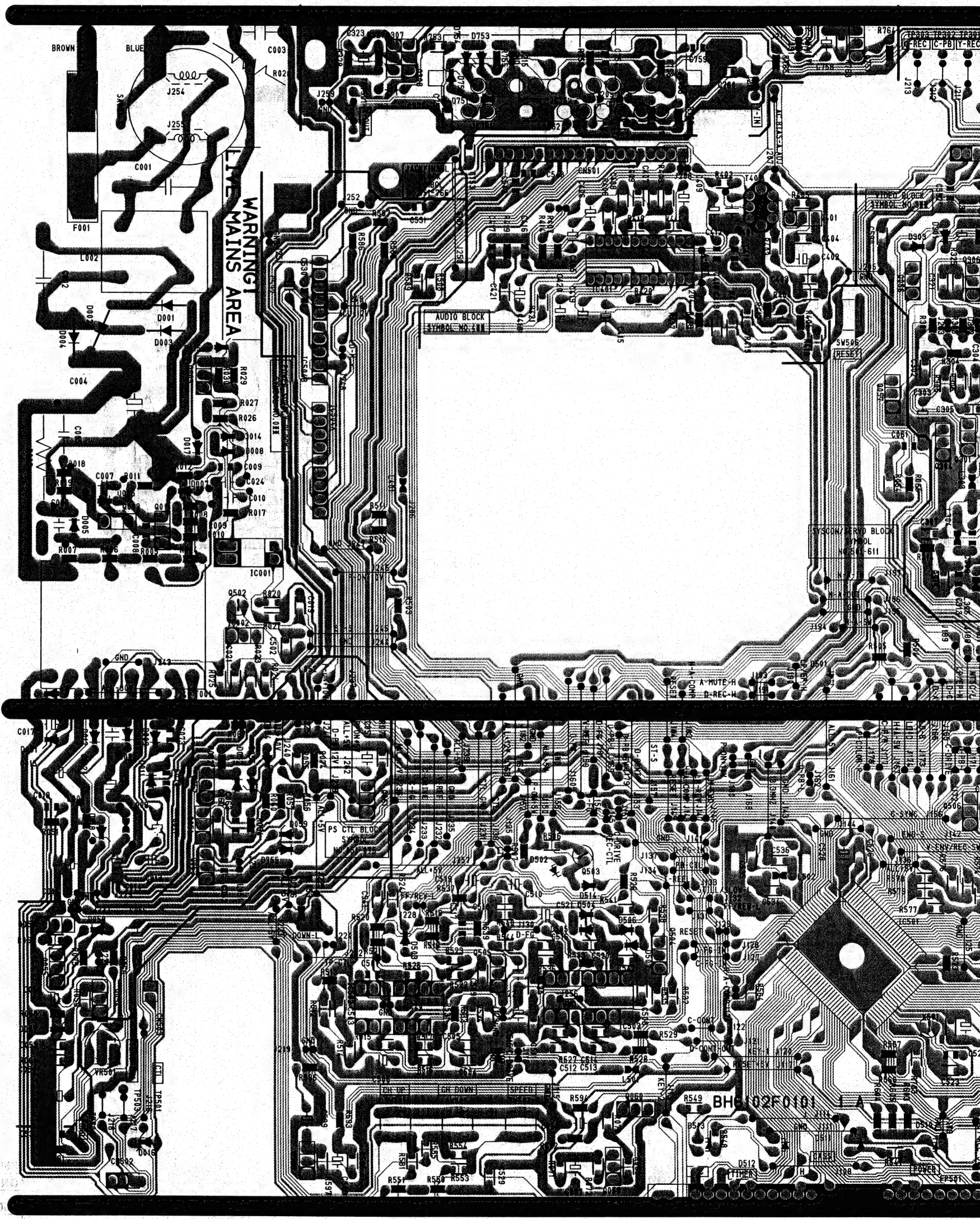


Main CBA Bottom View  
(CBA NO. : BH6102F01011A)

NOTE:  
The models covered by this manual employ two exchangeable Main CBAs which have the same parts but have patterns the are slightly different. (One of these two CBAs was provided to improve the production efficiency.) These CBAs can be identified by their CBA numbers that are screened on the lower left-hand conner of the top side. This number reads 'BH6102F0101' on the bottom line. Screened on top of this line is 1A or 2A, the last segment of the CBA number. when servicing, confirm this number of your unit to see which CBA you should refer to, BH6102F01011A below on these pages or BH6102F01012A following.

NOTE :  
THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING  
HOT GND AS A COMMON TERMINAL.

CAUTION  
FOR CONTINUED PROTECT  
REPLACE ONLY WITH THE

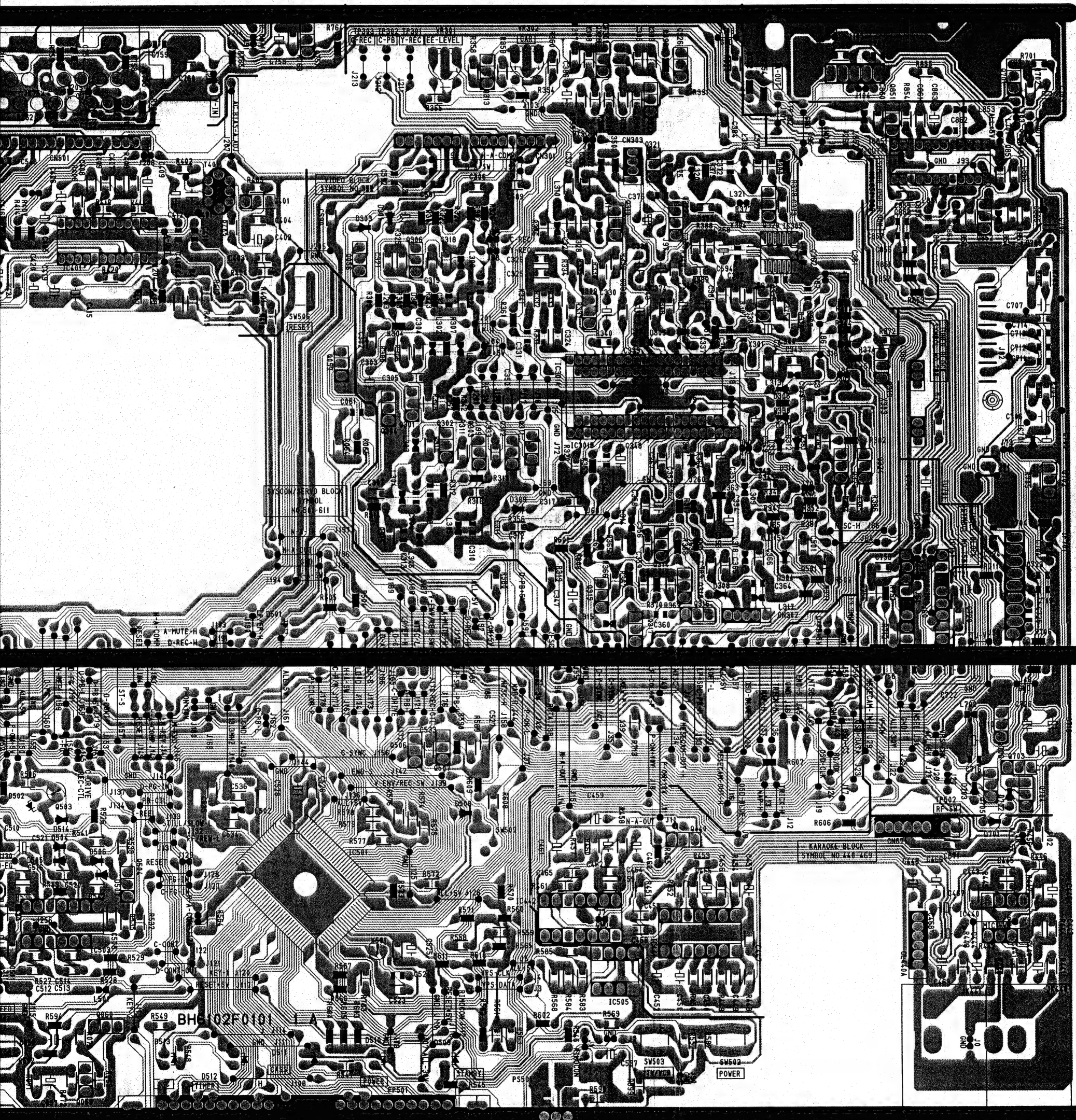




CIRCUIT IS MEASURED USING

**CAUTION**  
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,  
REPLACE ONLY WITH THE SAME TYPE FUSE.

**CAUTION !**  
Fixed or auto voltage power supply circuit is used in this unit.  
If Main Fuse (F01) is blown, check to see that all components in the power supply  
circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some components in the power supply circuit to fail.



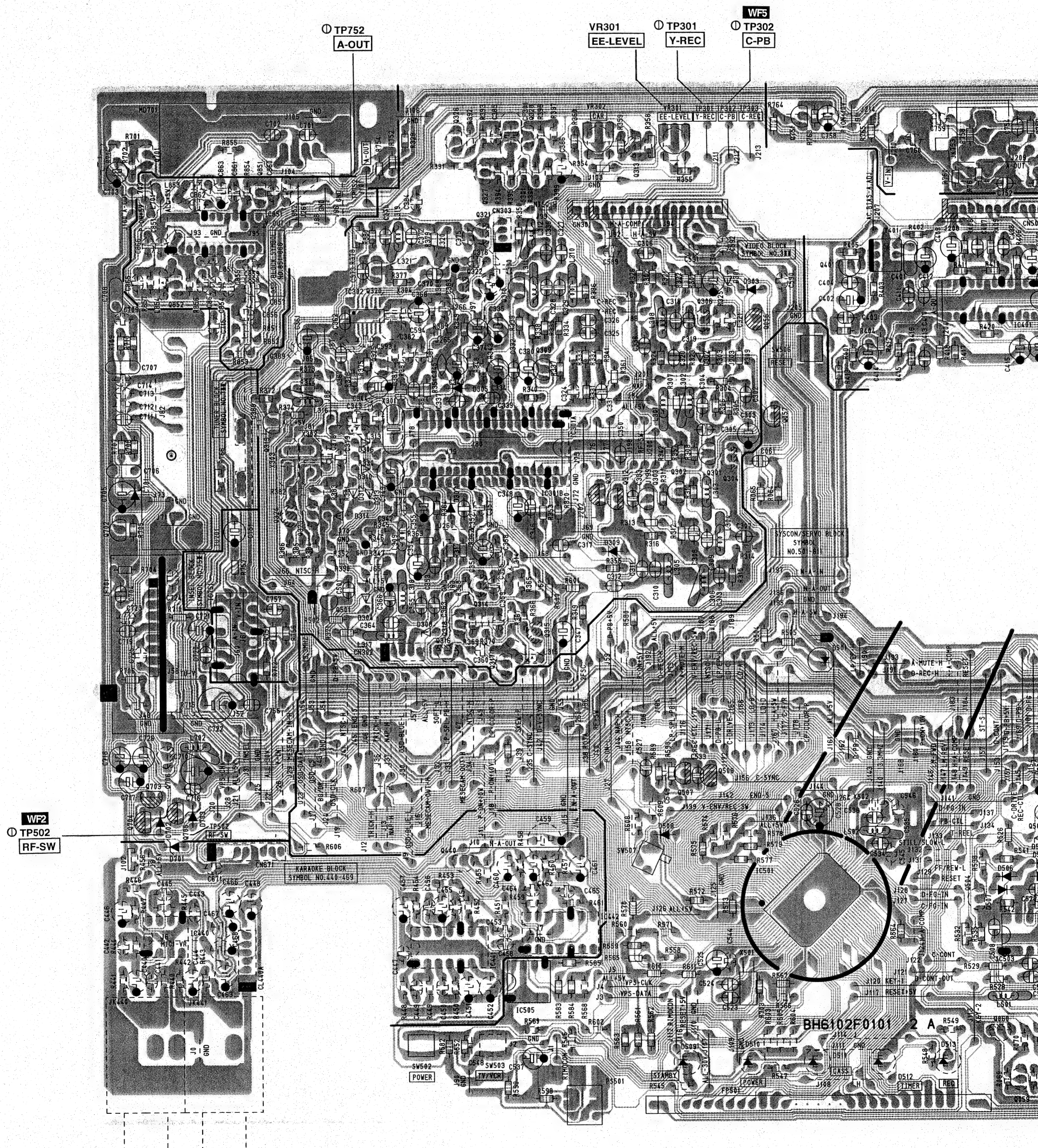


# Main CBA Top View (CBA NO. : BH6102F01012A)

NOTE: THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

**CAUTION**  
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,  
REPLACE ONLY WITH THE SAME TYPE FUSE.

**CAUTION !**  
Fixed or auto voltage  
If Main Fuse (F01)  
circuit are not defected  
Otherwise it may cause





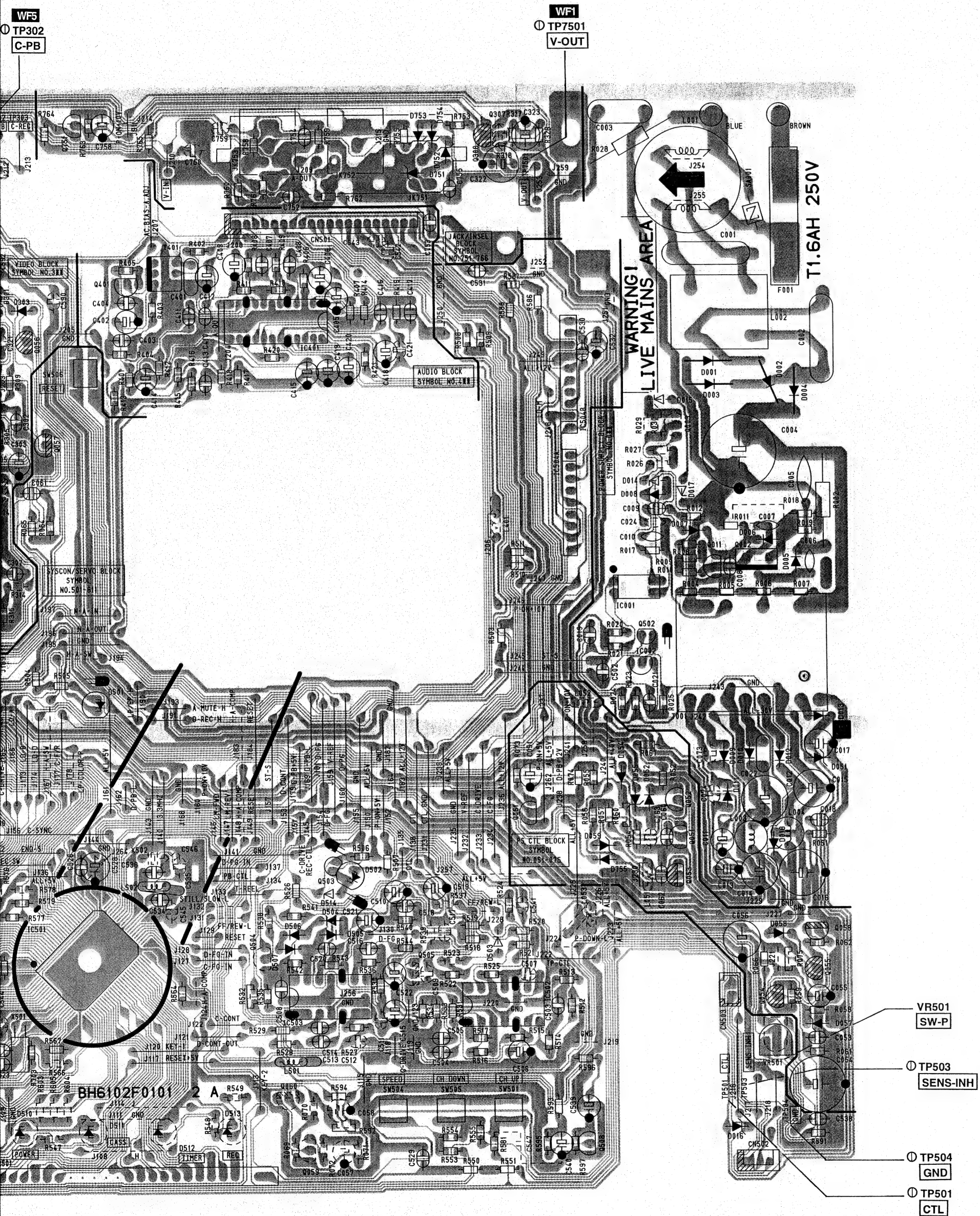
SECTION AGAINST FIRE HAZARD,  
THE SAME TYPE FUSE.

#### CAUTION !

Fixed or auto voltage power supply circuit is used in this unit.  
If Main Fuse (F01) is blown, check to see that all components in the power supply  
circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some components in the power supply circuit to fail.

#### NOTE:

The models covered by this manual employ two exchangeable Main CBAs which  
have the same parts but have patterns that are slightly different. (One of these two  
CBAs was provided to improve the production efficiency.) These CBAs can be  
identified by their CBA numbers that are screened on the lower left-hand corner  
of the top side. This number reads BH6102F0101 on the bottom line. Screened  
on top of this line is 1A or 2A, the last segment of the CBA number. When servicing  
confirm this number of your unit to see which CBA you should refer to.  
BH6102F01012A below on these pages or BH6102F01011A following.





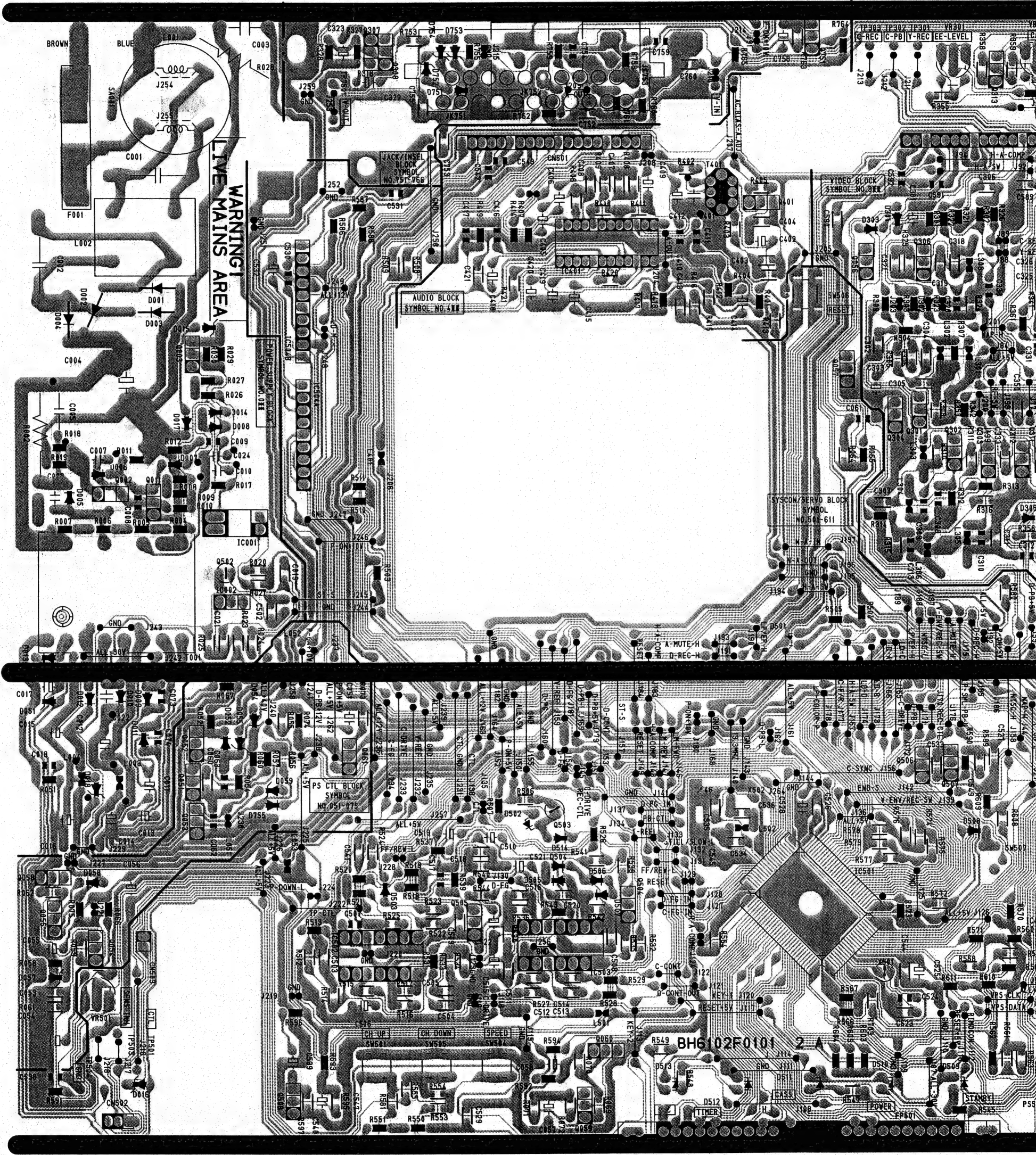
Main CBA Bottom View  
(CBA NO. : BH6102F01012A)

NOTE:  
The models covered by this manual employ two exchangeable Main CBAs which have the same parts but have patterns the are slightly different. (One of these two CBAs was provided to improve the production efficiency.) These CBAs can be identified by their CBA numbers that are screened on the lower left-hand conner of the top side. This number reads BH6102F0101 on the bottom line. Screened on top of this line is 1A or 2A, the last segment of the CBA number. when servicing, confirm this number of your unit to see which CBA you should refer to, BH6102F01012A below on these pages or BH6102F01011A following.

NOTE: THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

CAUTION  
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,  
REPLACE ONLY WITH THE SAME TYPE FUSE.

CAUTION !  
Fixed or auto  
If Main Fuse ( circuit are not  
Otherwise it m

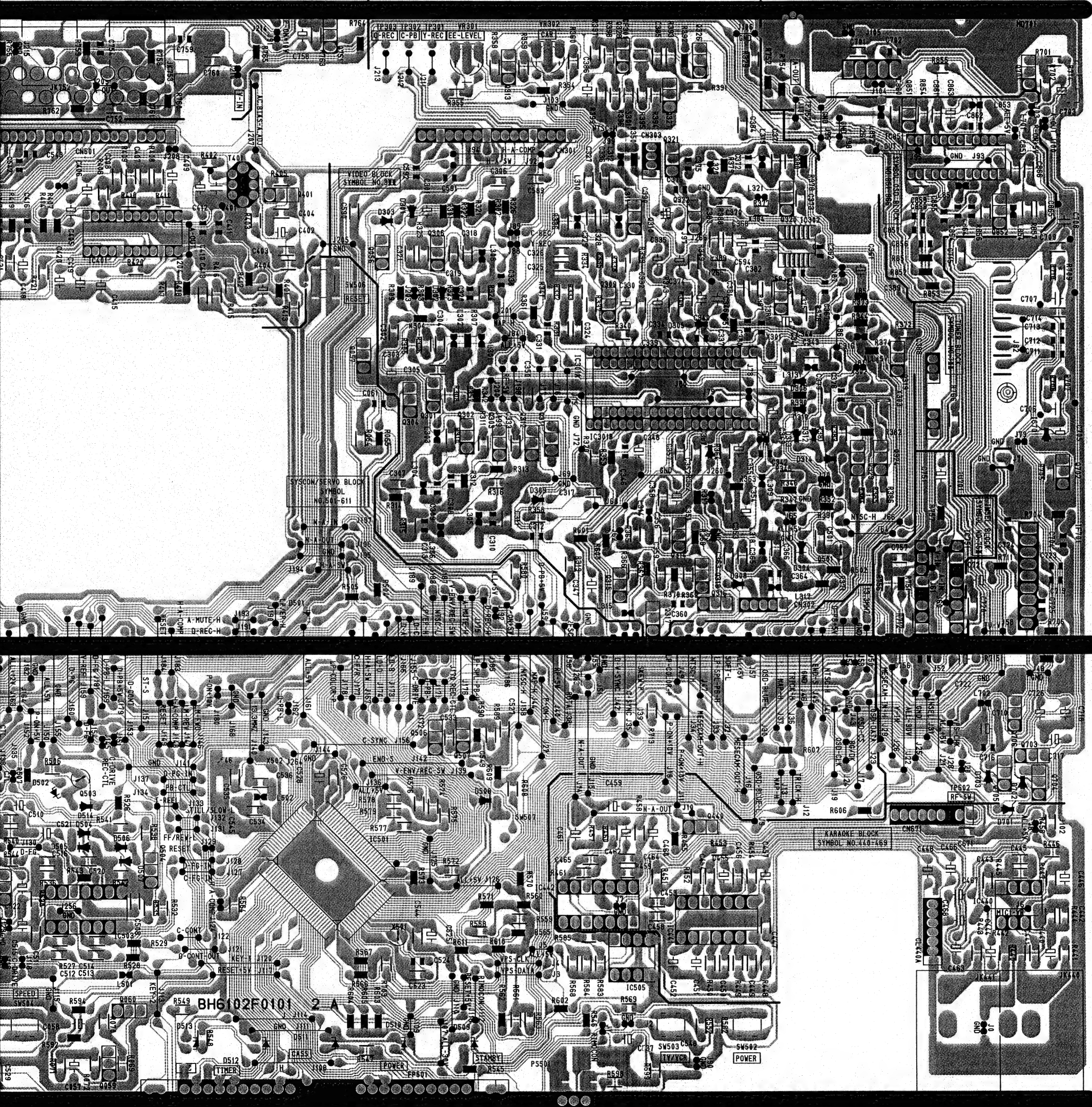




two exchangeable Main CBAs which  
e slightly different. (One of these two  
on efficiency.) These CBAs can be  
eened on the lower left-hand conner  
F0101 on the bottom line. Screened  
of the CBA number. when servicing,  
which CBA you should refer to,  
BH6102F01011A following.

CAUTION  
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,  
REPLACE ONLY WITH THE SAME TYPE FUSE.

CAUTION !  
Fixed or auto voltage power supply circuit is used in this unit.  
If Main Fuse (F01) is blown, check to see that all components in the power supply  
circuit are not defective before you connect the AC plug to the AC power supply.  
Otherwise it may cause some components in the power supply circuit to fail.

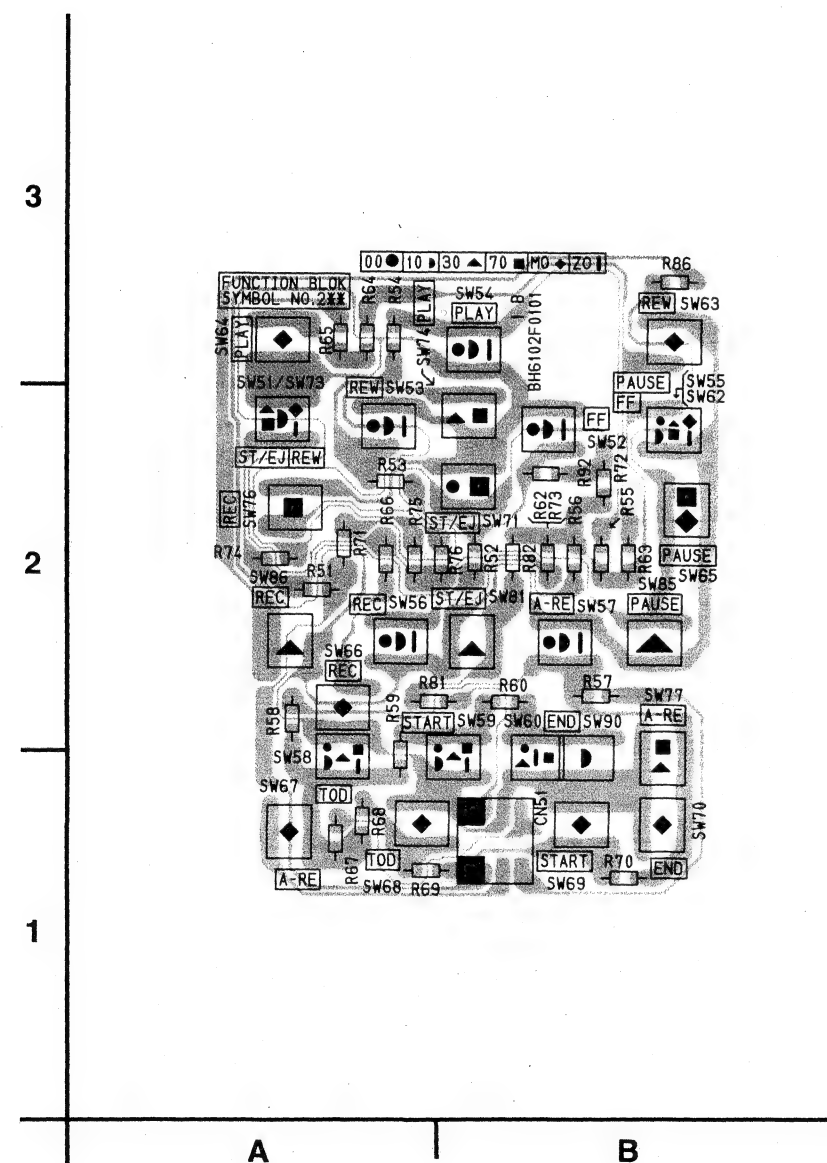




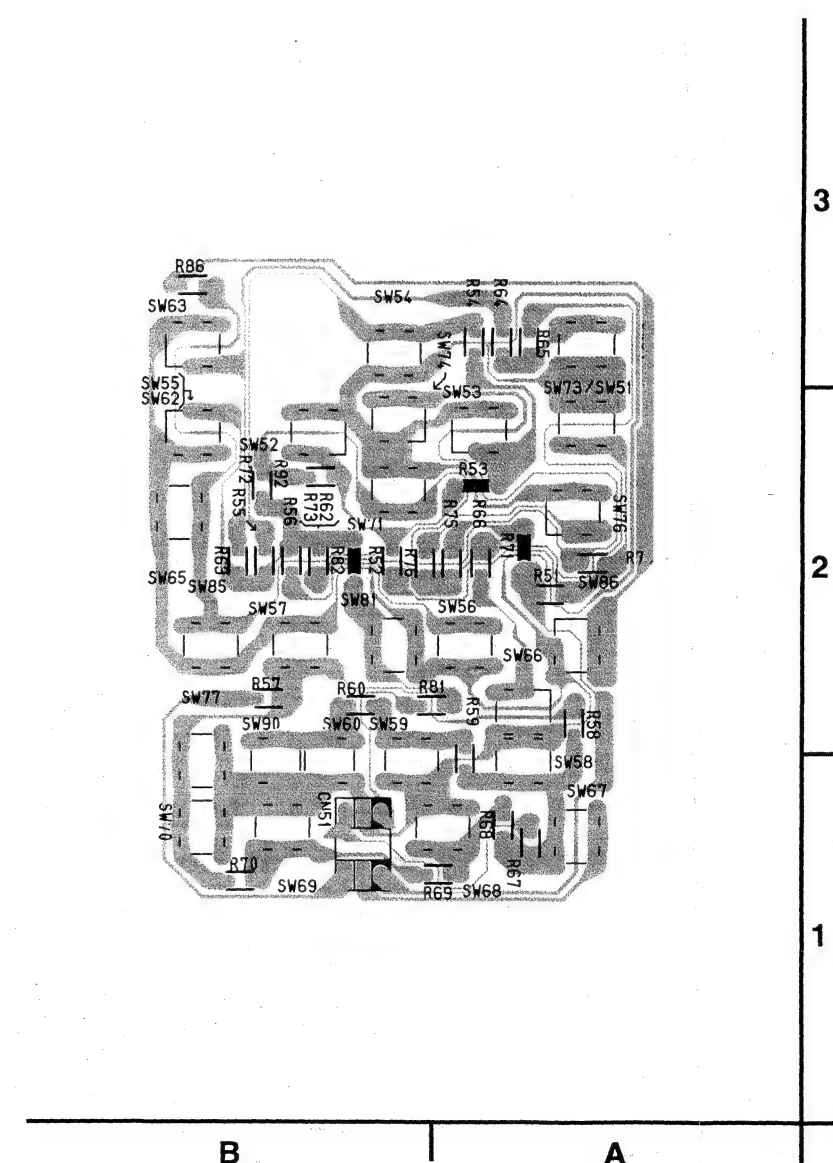
# Function CBA Top View (CBA NO. : BH6102F01011B)

## NOTE:

The models covered by this manual employ two exchangeable Function CBAs which have the same parts but have patterns the are slightly different. (One of these two CBAs was provided to improve the production efficiency.) These CBAs can be identified by their CBA numbers that are screened on the lower left-hand conner of the top side. This number reads BH6102F0101 on the bottom line. Screened on top of this line is 1B or 2B, the last segment of the CBA number. when servicing, confirm this number of your unit to see which CBA you should refer to, BH6102F01011B below on these pages or BH6102F01012B following.

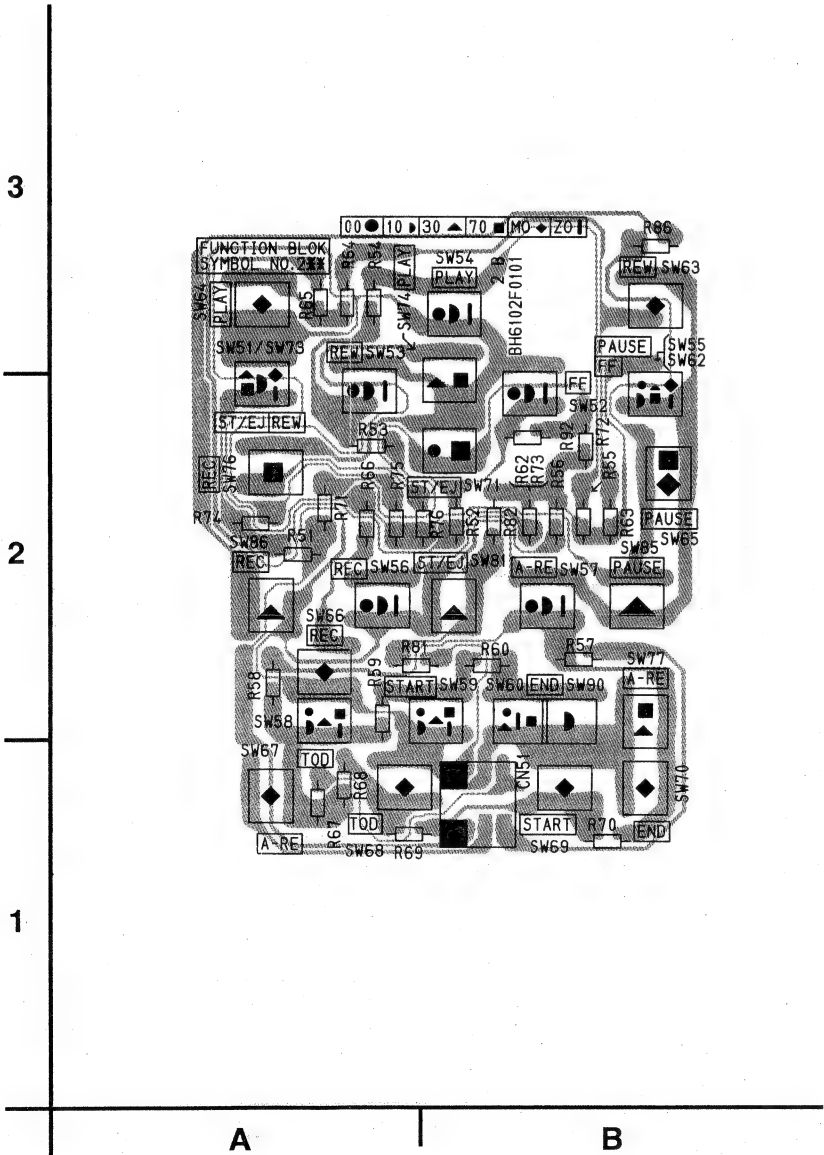


# Function CBA Bottom View (CBA NO. : BH6102F01011B)

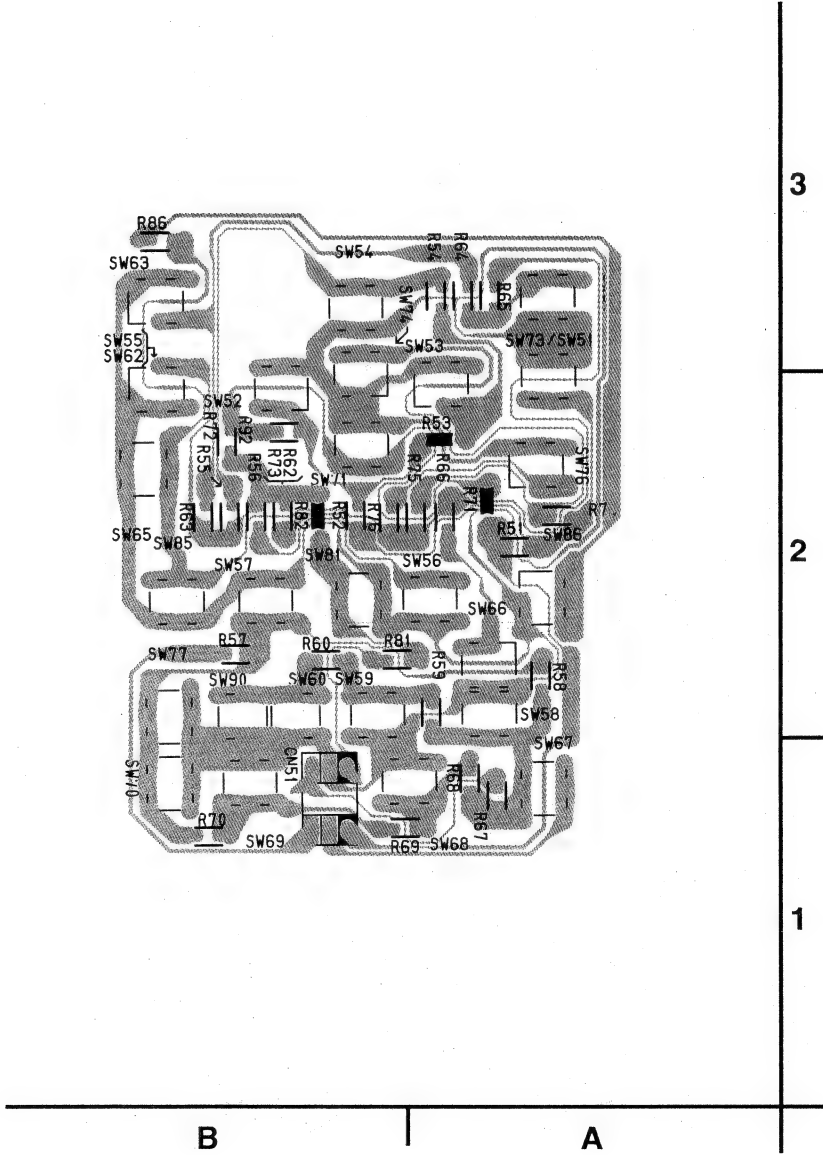


**Function CBA Top View**  
**(CBA NO. : BH6102F01012B)**

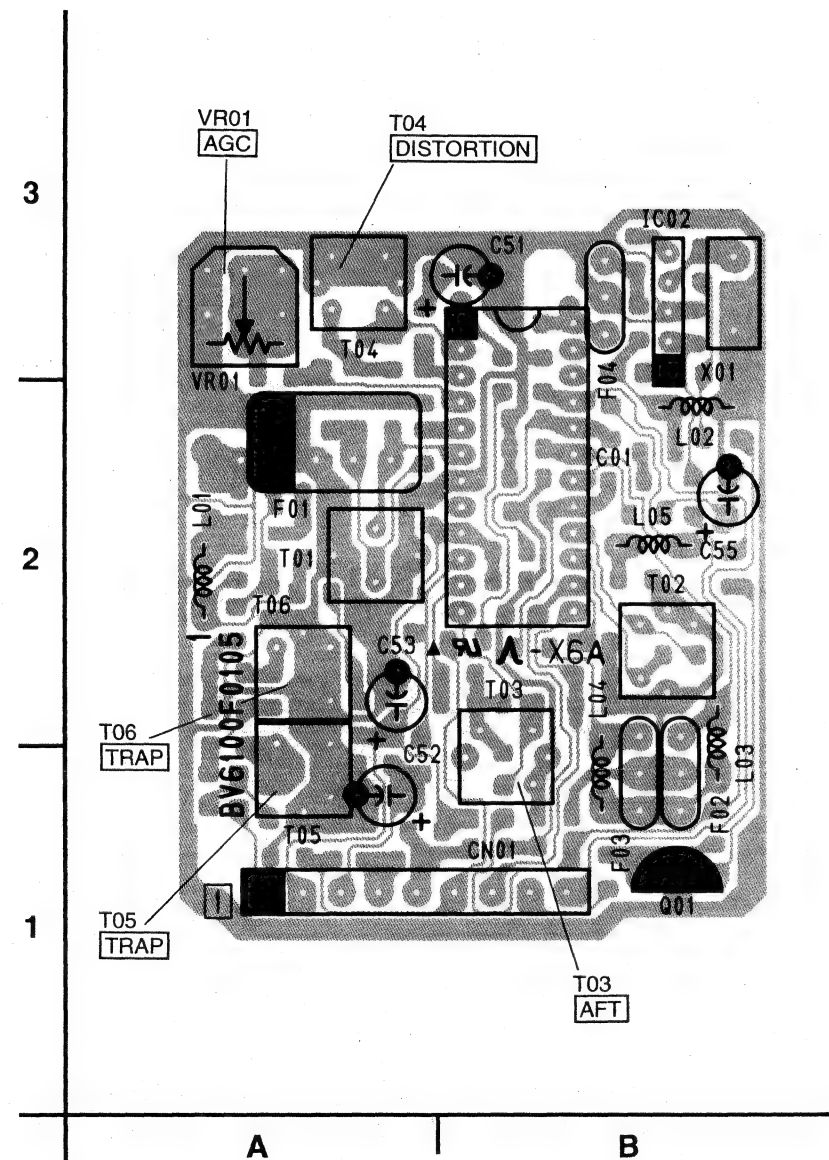
NOTE:  
The models covered by this manual employ two exchangeable Function CBAs which have the same parts but have patterns the are slightly different. (One of these two CBAs was provided to improve the production efficiency.) These CBAs can be identified by their CBA numbers that are screened on the lower left-hand corner of the top side. This number reads BH6102F0101 on the bottom line. Screened on top of this line is 1B or 2B, the last segment of the CBA number. when servicing, confirm this number of your unit to see which CBA you should refer to, BH6102F01012B below on these pages or BH6102F01011B following.



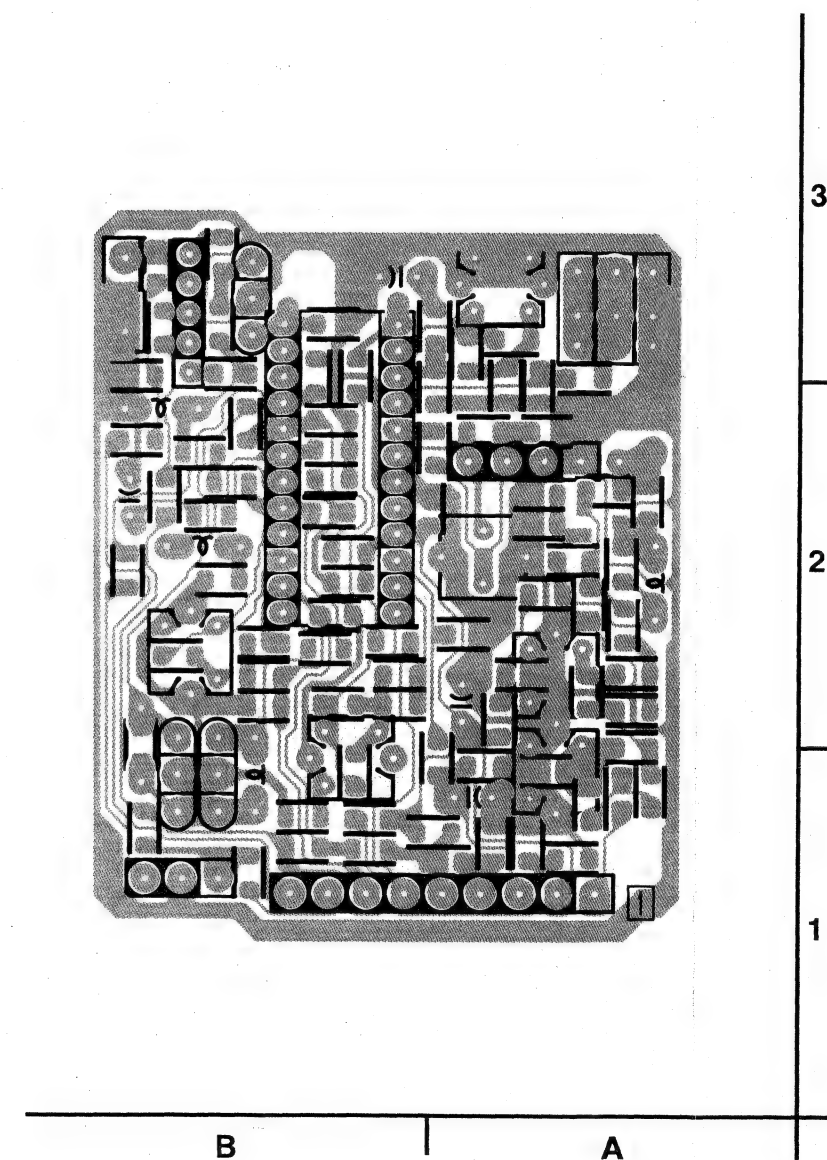
**Function CBA Bottom View**  
**(CBA NO. : BH6102F01012B)**



IF CBA Top View



IF CBA Bottom View



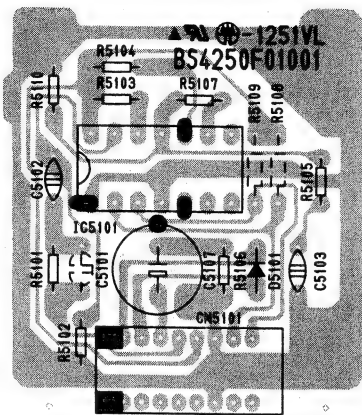
BV6100F01051

NOTE:  
The models covered by this manual employ two exchangeable VPS CBAs but parts and patterns are quite different. (One of these two CBAs was provided to improve the production efficiency.)These CBAs can be identified by their CBA numbers that are screened on the upper right-hand conner of the top side. this number reads BS4250F01001 on the top line. when servicing, confirm this number of your unit to see which CBA you should refer. If the CBA number is not showing on the top line. This is identified as BK8036F01A01.

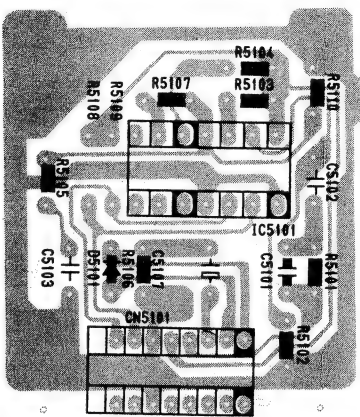
Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D

VPS Top View (B, D)  
CBA NO. : BS4250F01001

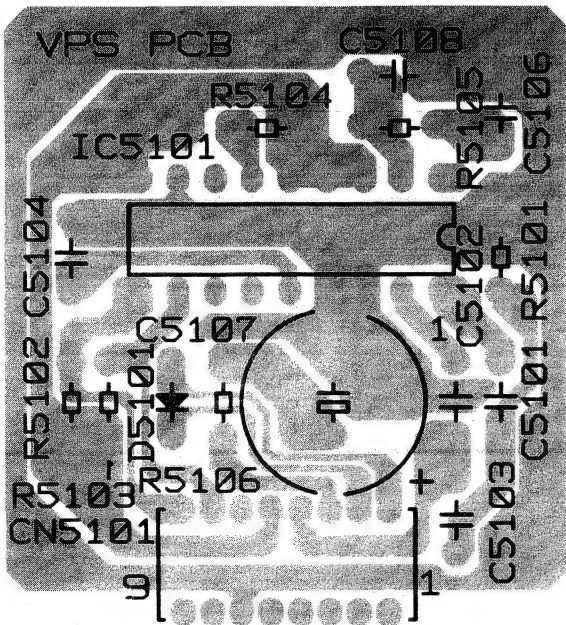


VPS Bottom View (B, D)  
CBA NO. : BS4250F01001

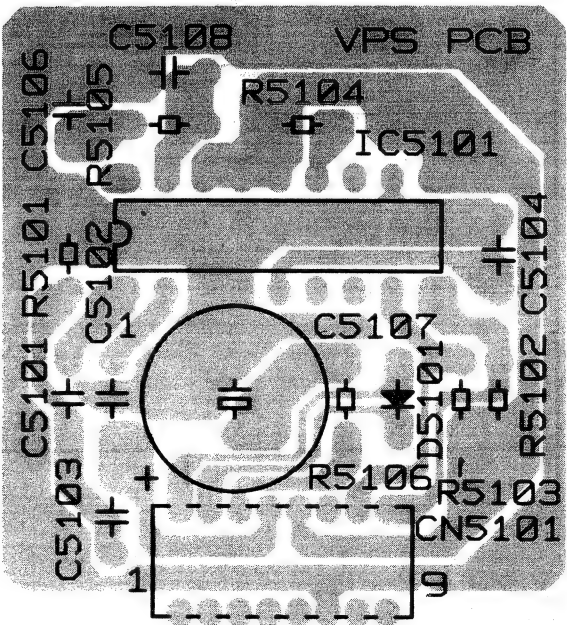


BS4250F01001

VPS Top View (B, D)  
CBA NO. : BK8036F01A01



VPS Bottom View (B, D)  
CBA NO. : BK8036F01A01

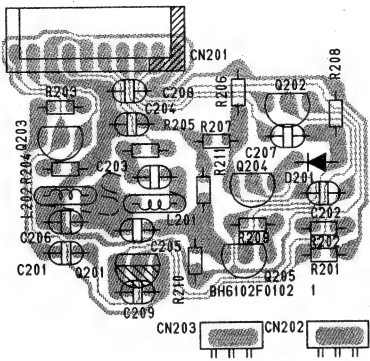


BK8036F01A01

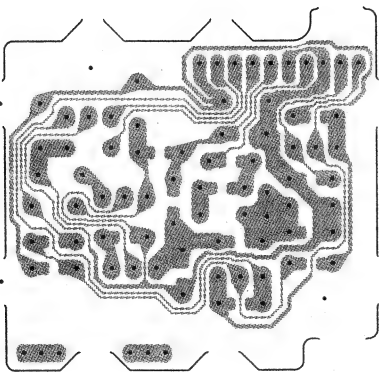
CSV CBA Top View (C, D)

Comparison Chart of Models and Marks

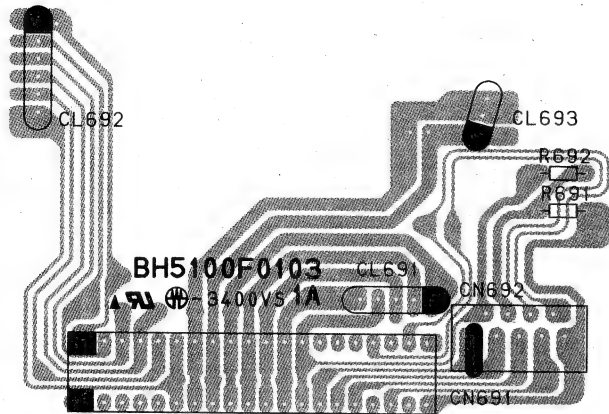
MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D



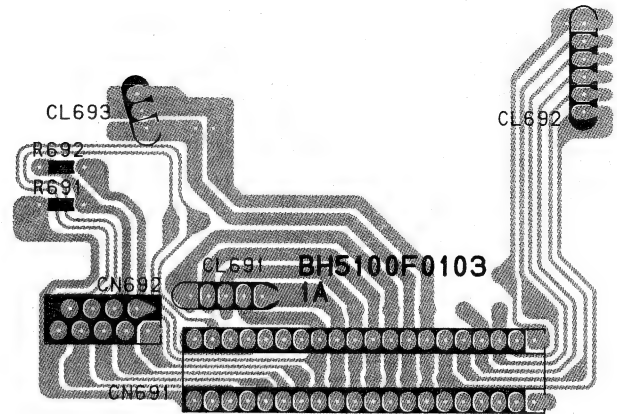
CSV CBA Bottom View (C, D)



**Joint CBA Top View**

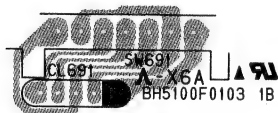


**Joint CBA Bottom View**

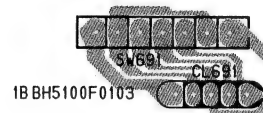


BH5100F0103-1A

**Mode Sw CBA Top View**

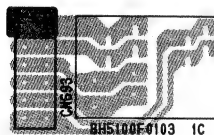


**Mode Sw CBA Bottom View**

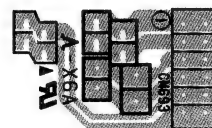


BH5100F0103-1B

**Ace Head CBA Top View**

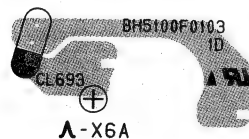


**Ace Head CBA Bottom View**



BH5100F0103-1C

**Motor CBA Top View**



**Motor CBA Bottom View**



BH5100F0103-1D

A

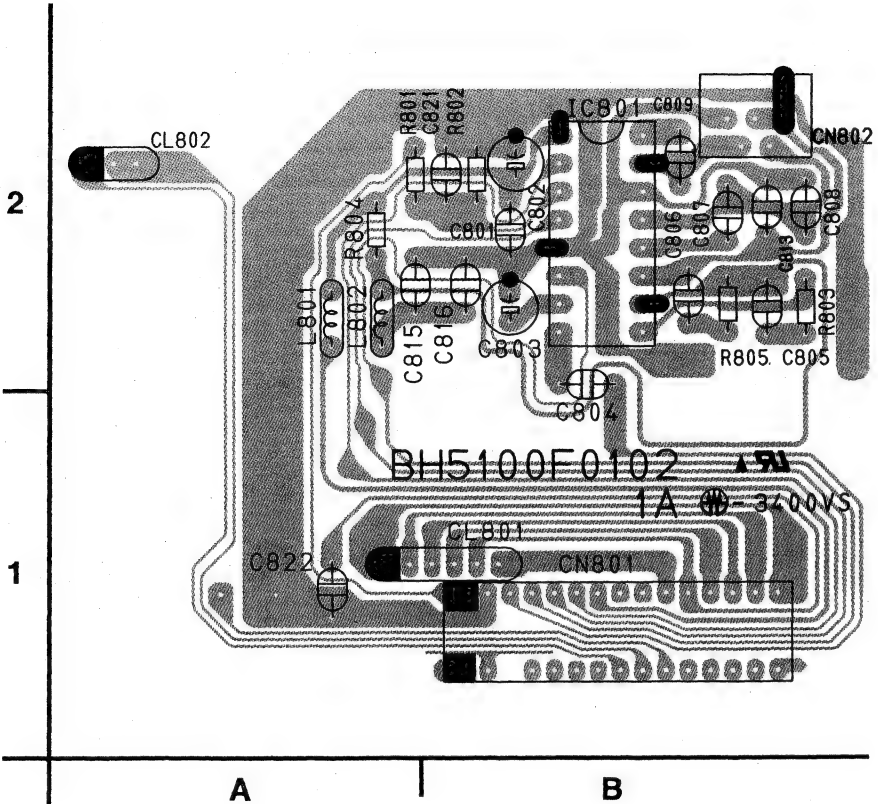
B

C

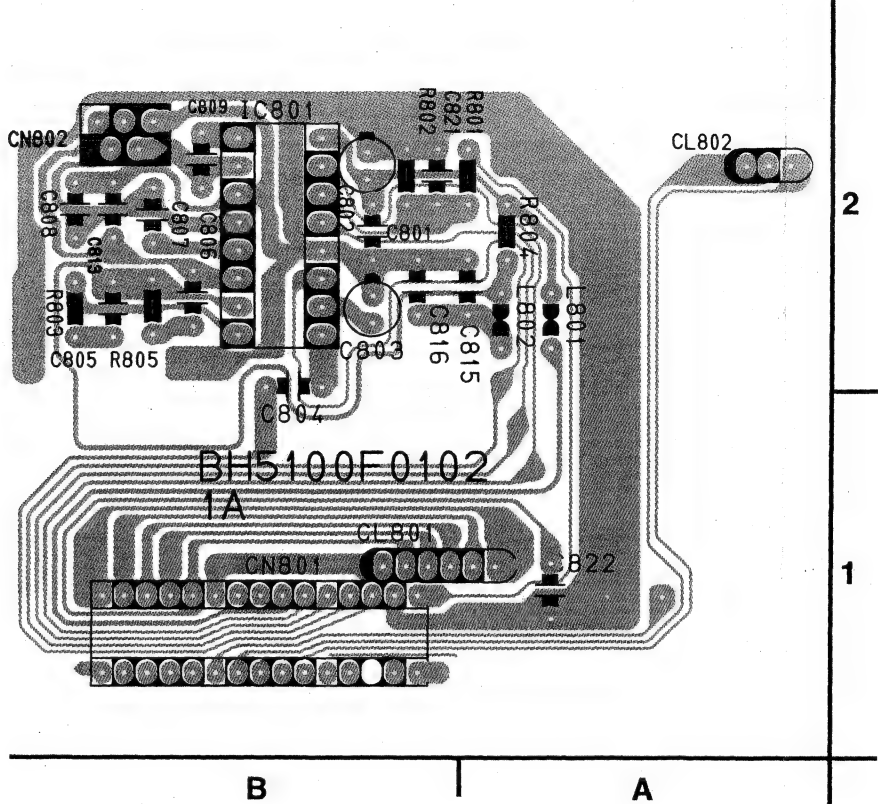
D



Head Amp CBA Top View (A, B)



Head Amp CBA Bottom View (A, B)



BH5100F0102-1A

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D

Note: There are two types of FE head CBAs and three types of FE heads. Combinations are made clear in Deck electrical parts list. As long as the combination is correct, all the three types of FE heads are interchangeable.

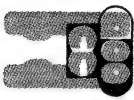
FE Head CBA Top View

(TYPE B)  
(A, B)



FE Head CBA Bottom View

(TYPE B)  
(A, B)



BH5100F0102-1B

FE Head CBA Top View

(TYPE C)  
(A, B)



FE Head CBA Bottom View

(TYPE C)  
(A, B)



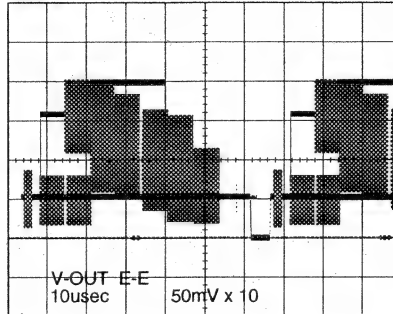
BH5100F0102-1C

Note: There are two types of FE head CBAs and three types of FE heads. Combinations are made clear in Deck electrical parts list. As long as the combination is correct, all the three types of FE heads are interchangeable. The digit "3" is abbreviated in a reference number screened on CBAs. For example, CL802 on CBA is in fact CL3802.

MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D

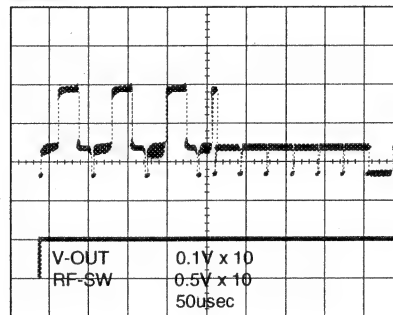
# WAVEFORMS

**WF 1** (TP7501 of Main CBA)



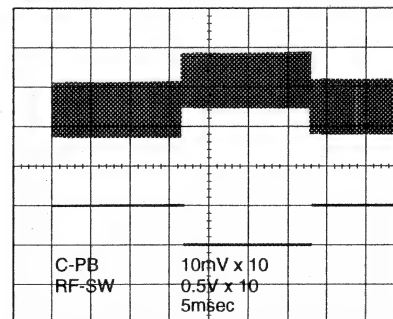
**WF1** UPPER (TP7501 of Main CBA)

**WF2** LOWER (TP502 of Main CBA)



**WF5** UPPER (TP302 of Main CBA)

**WF2** LOWER (TP502 of Main CBA)

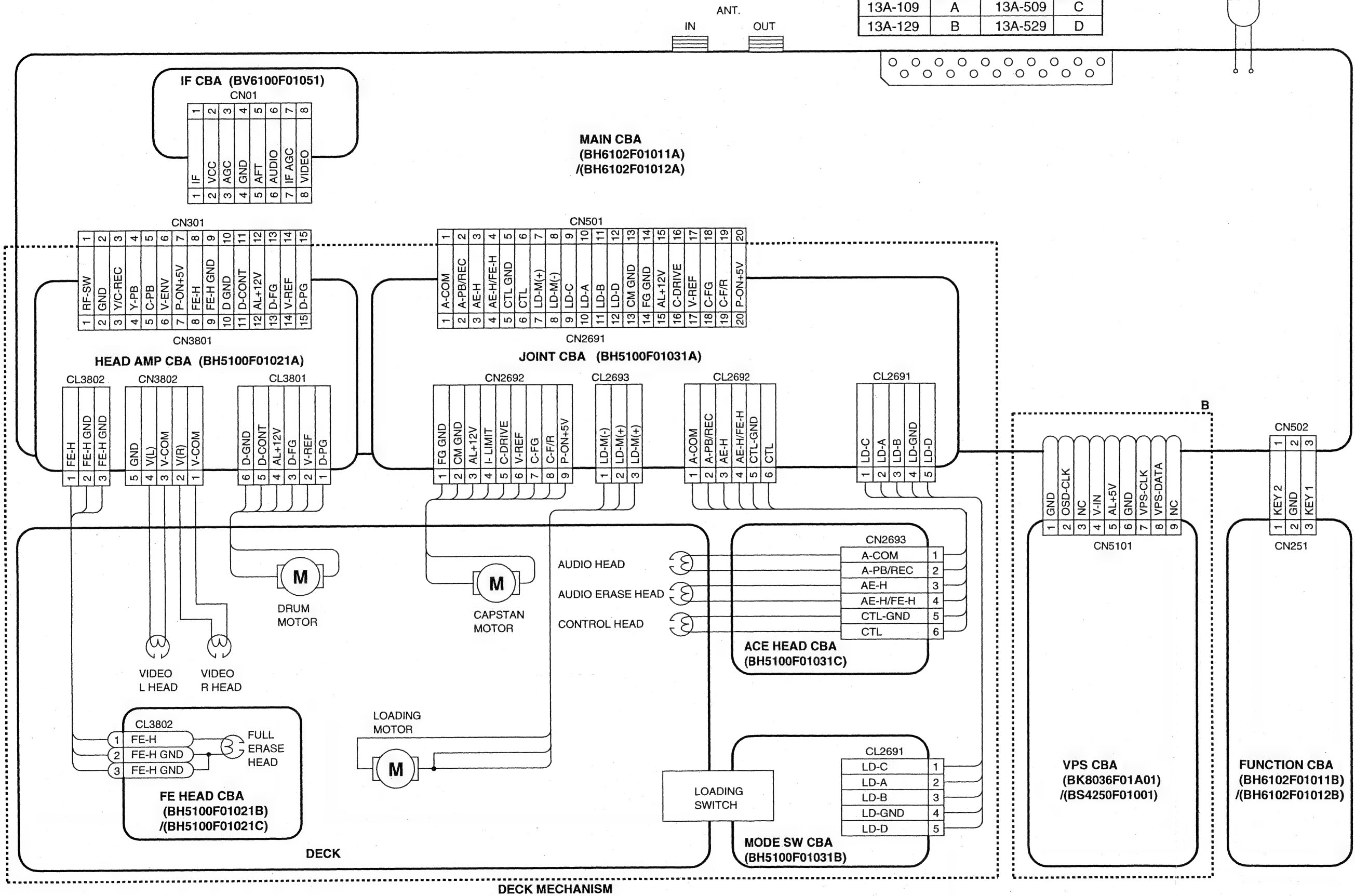
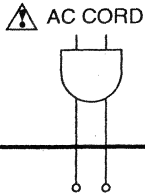


Wiring Diagram (A, B)

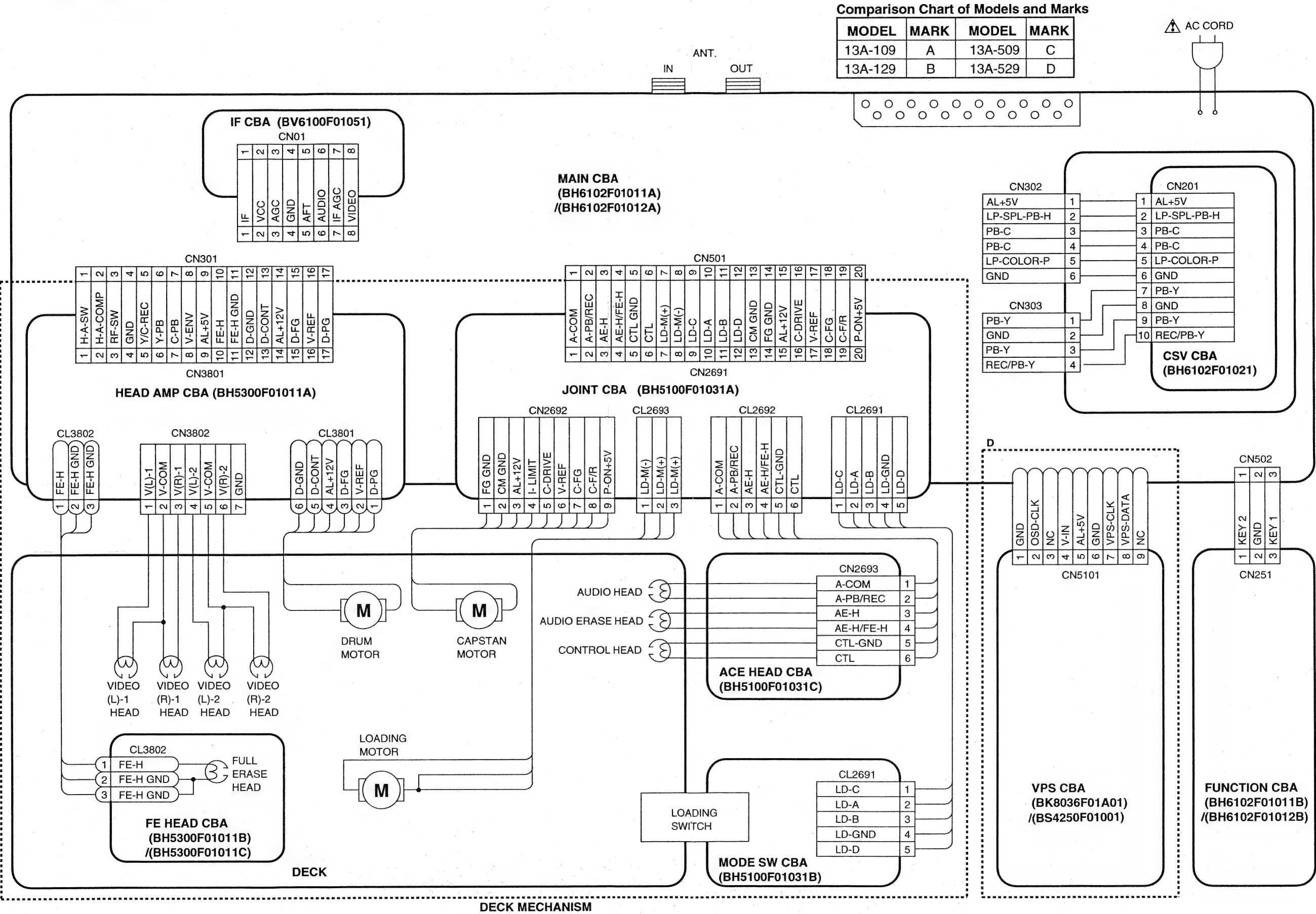
WIRING DIAGRAMS

Comparison Chart of Models and Marks

MODEL	MARK	MODEL	MARK
13A-109	A	13A-509	C
13A-129	B	13A-529	D



Wiring Diagram (C, D)





# SYSTEM CONTROL TIMING CHARTS

## Mode SW : LD-A/LD-B/LD-C/LD-D

LD-SW				Symbol
LD-A	LD-B	LD-C	LD-D	
L	H	H	H	EJ
H	H	H	H	CL
L	L	H	H	SB
H	L	H	H	TL
H	L	L	H	FB
H	H	L	H	SF
H	H	L	L	AU
H	H	H	L	AL
H	L	H	L	SS
H	H	H	H	GC
L	H	H	L	RS

Eject  
REW Reel  
Stop (B)  
Brake Cancel  
FF / REW, Stop (A)  
Play / REC (FS Pause 2 Head Still)  
4 Head Slow / Still  
Capstan Reversal  
RS (REV Reel)

### Note:

EJ — RS : Loading FWD (LM-FWD "H", LM-REW "L")

RS — EJ : Loading REV (LM-FWD "L", LM-REW "H")

Stop (A) = Loading

Stop (B) = Unloading

### Note :

Symbol	Loading Status
EJ	Eject
CL	Eject ~ Loading Completion
SB	REW ~ Stop(B)
TL	Stop(B) ~ Brake Cancel
FB	Brake Cancel ~ FF / REW
SF	FF / REW ~ Stop(A)
AU	Stop(A) ~ Play / REC
AL	Play / REC ~ 4 Head Still / Slow
SS	4 Head Still / Slow ~ Capstan Reversal
GC	Capstan Reversal ~ REW Reel
RS	RS (REV)

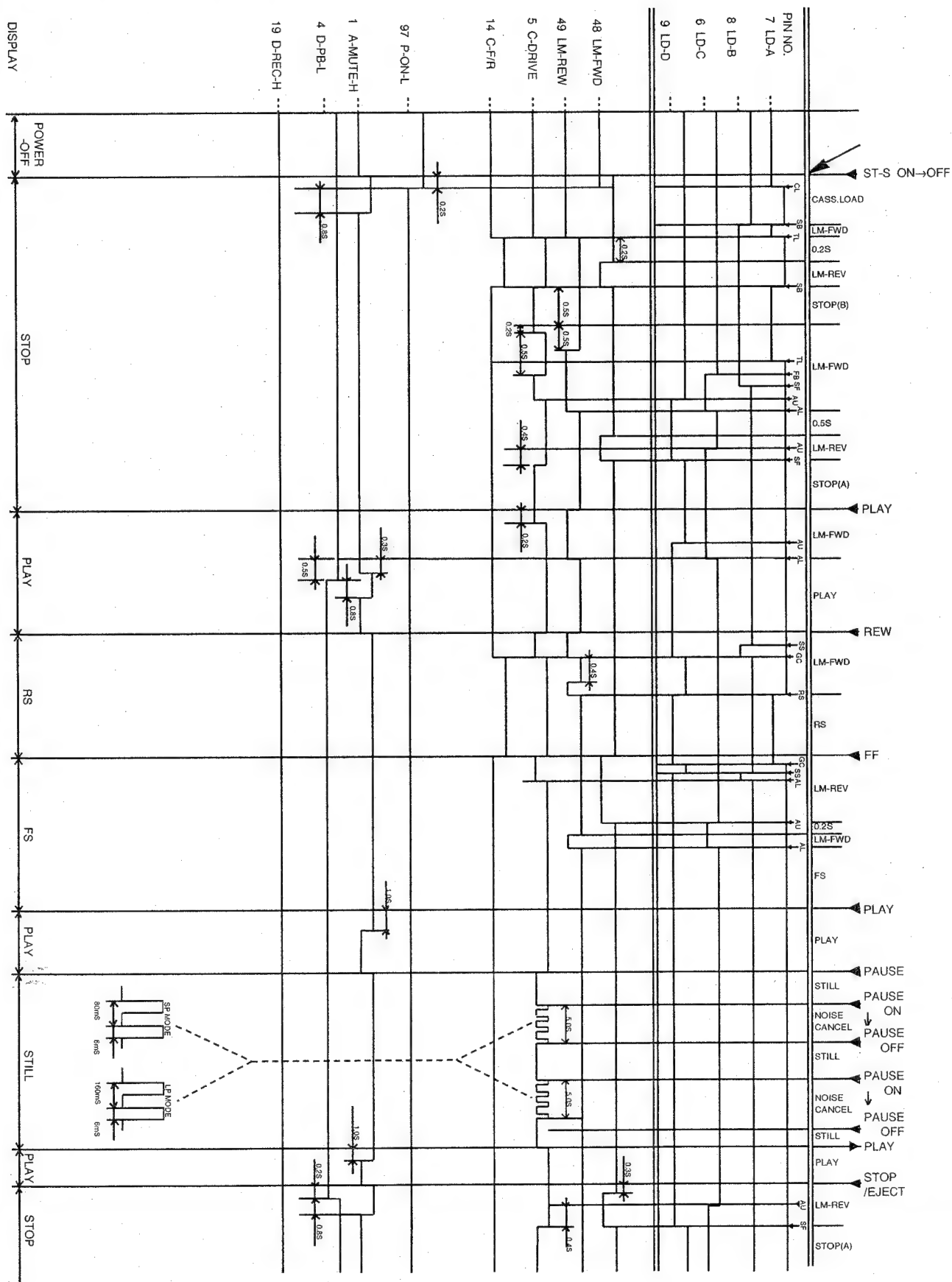
## Loading Motor/Control

LM-FWD	LM-REW	Description
H	H	Stop
H	L	Loading Forward Rotation
L	H	Loading Reverse Rotation

## Capstan Motor/Control

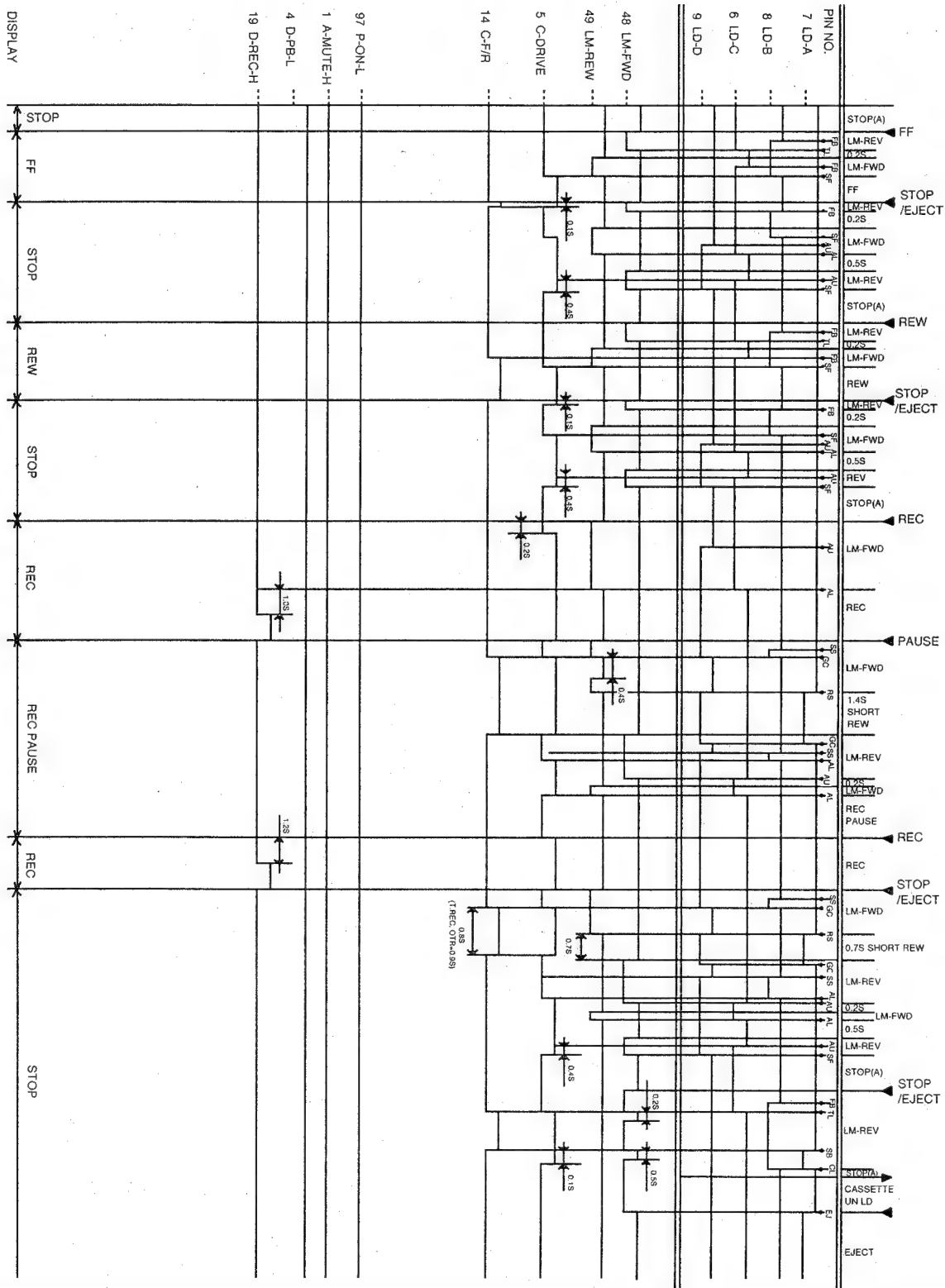
C-DRIVE	C-F/R	Description
L	L/H	Stop, The brake is not applied.
H or HI-Z	L	Capstan, Reel Forward Rotation
H or HI-Z	H	Capstan, Reel Reverse Rotation

### 13A-109 and 13A-129 Models only





### 13A-109 and 13A-129 Models only



## 13A-509 and 13A-529 Models only

### Still/Slow Control

#### Frame Advance Timing Chart

1) SP MODE

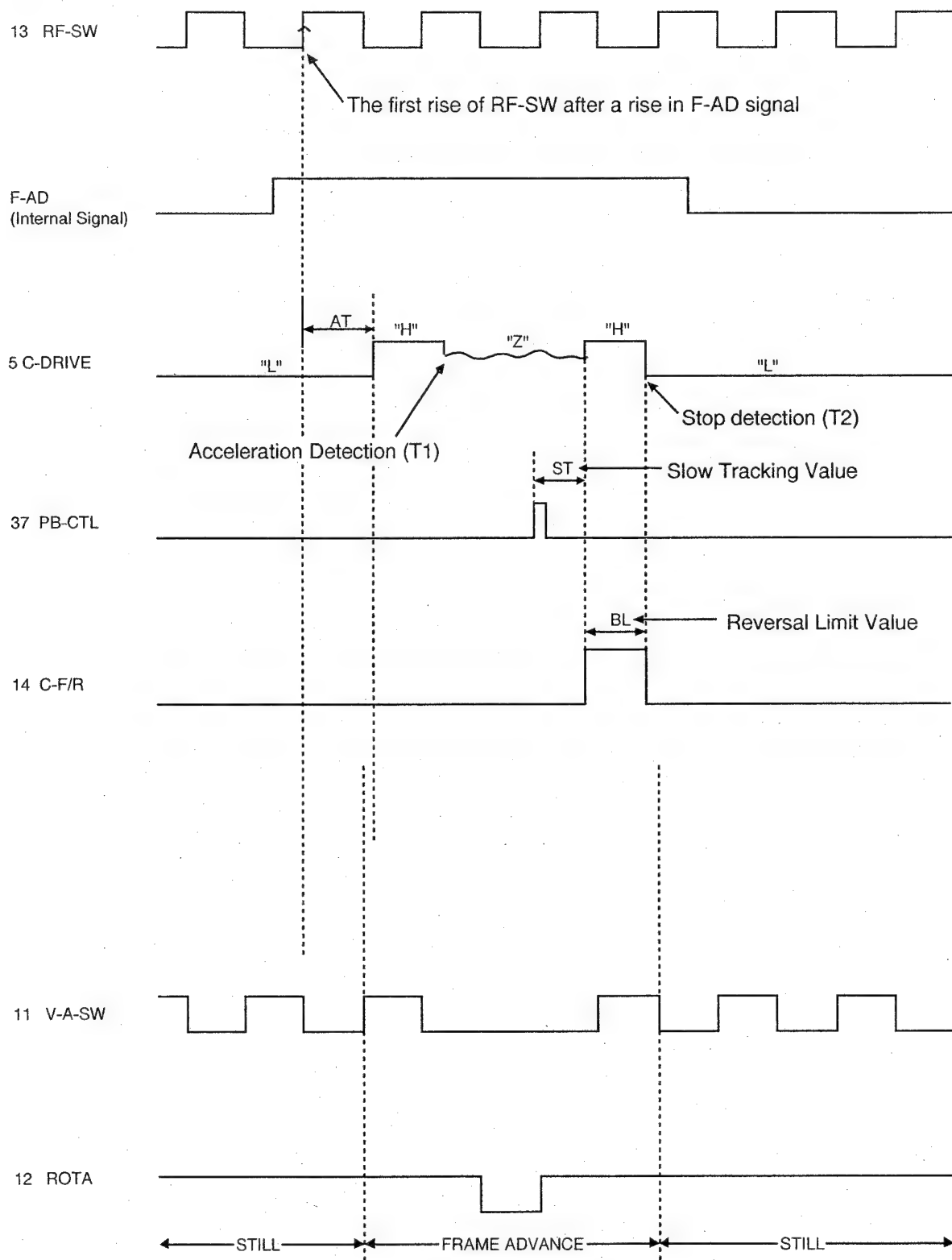


Fig.1

# 13A-509 and 13A-529 Models only

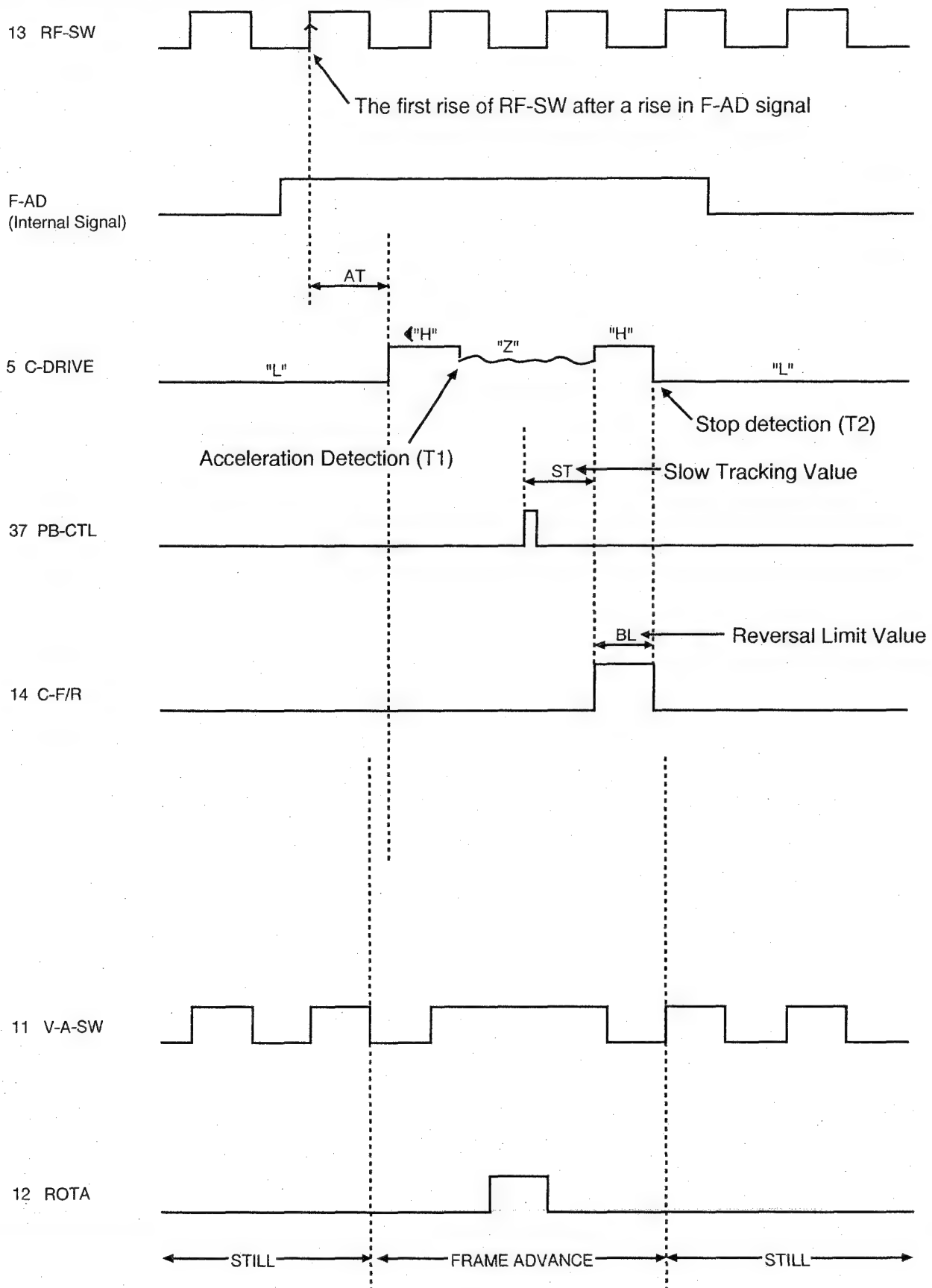
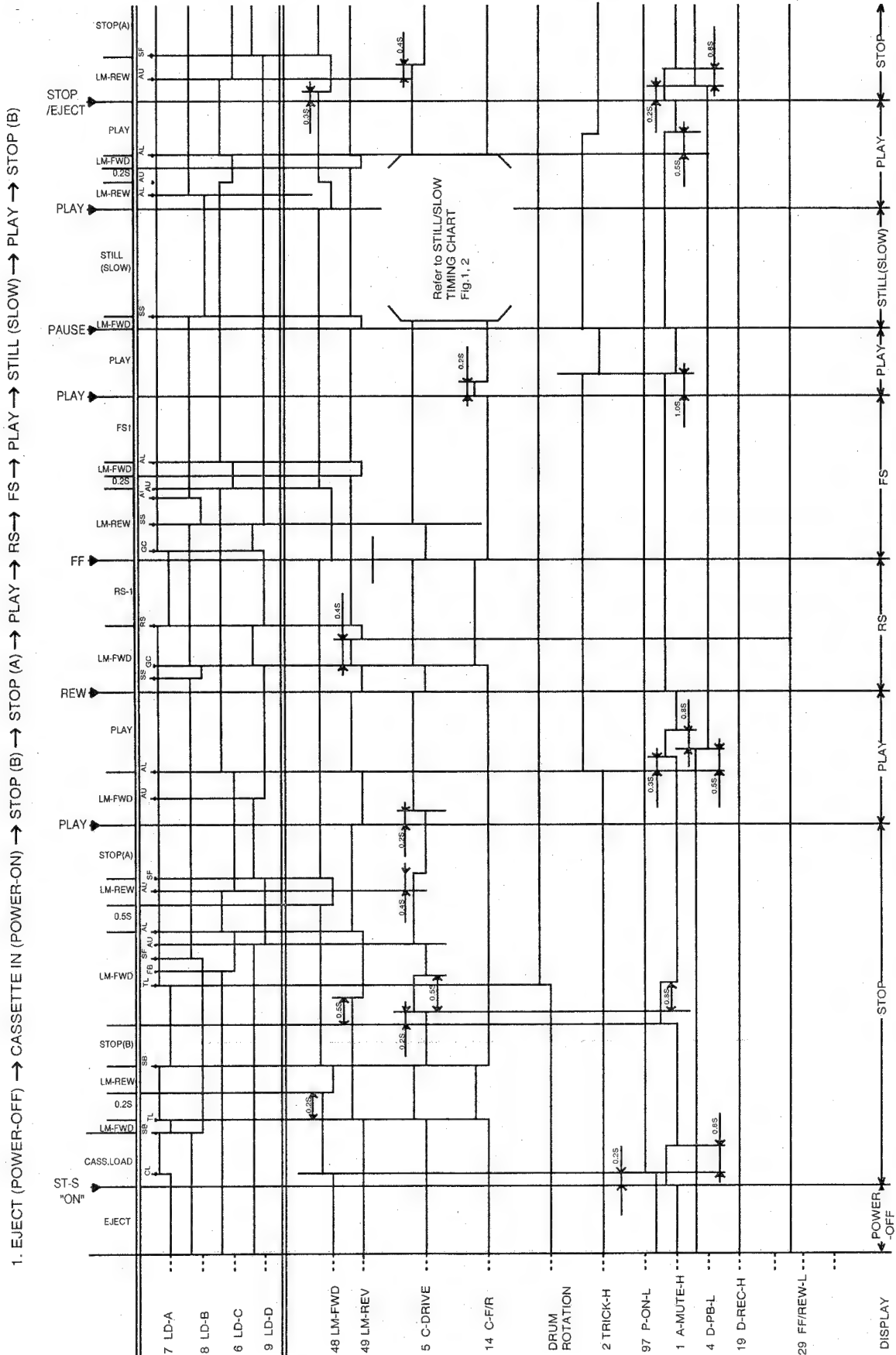
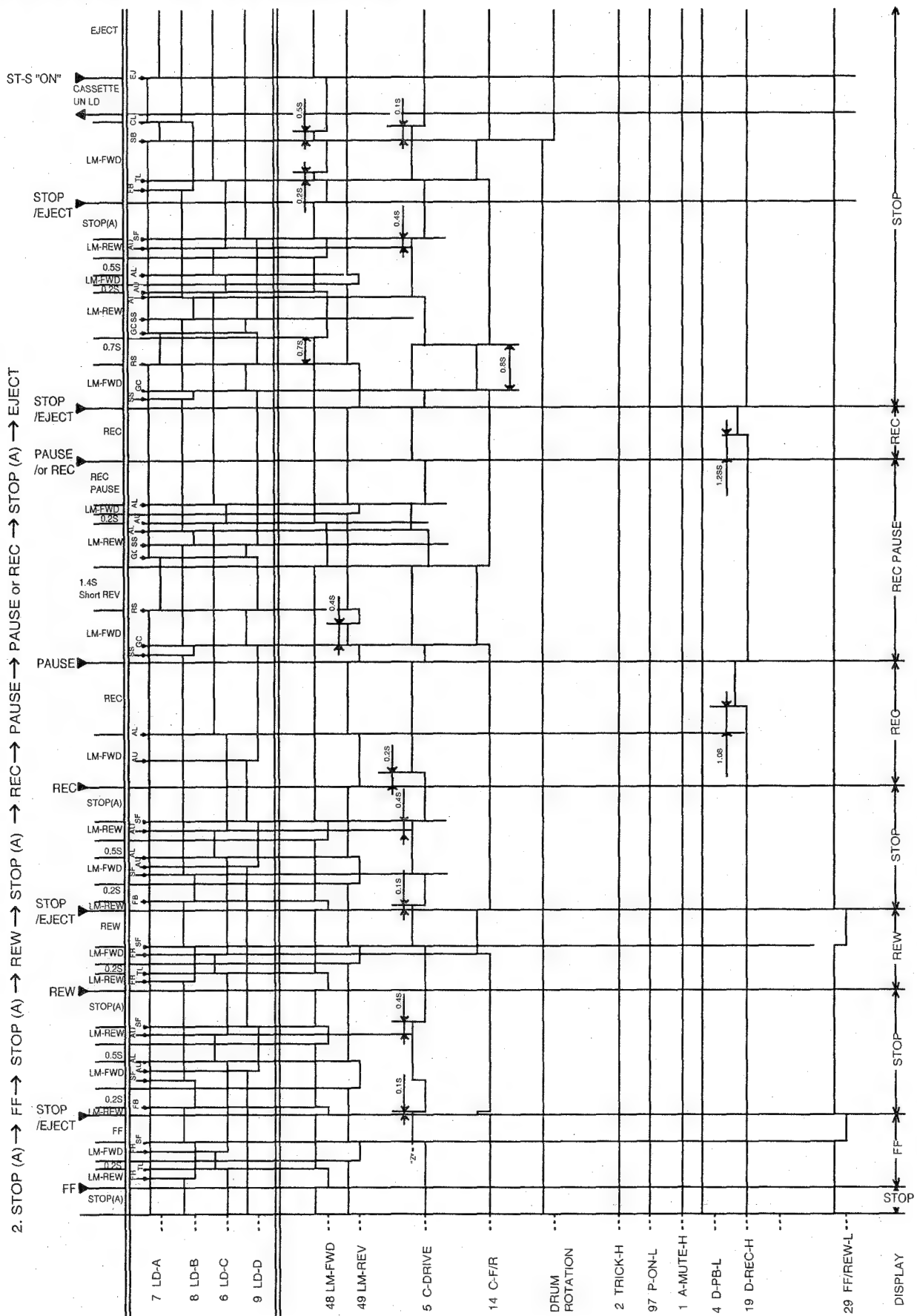


Fig.2

# 13A-509 and 13A-529 Models only



# 13A-509 and 13A-529 Models only





# IC PIN FUNCTION DESCRIPTION

## IC501 ( SERVO / SYSTEM CONTROL IC )

"H" ≥ 4.5V, "L" ≤ 1.0V

### Comparison Chart of Models and Marks

MODEL	MARK
13A-109	A
13A-129	B
13A-509	C
13A-529	D

Pin No.	Mark	IN/OUT	Signal Name	Function	Active Level
1		OUT	A-MUTE-H	AUDIO Mute Signal Output	H
2	A,B	OUT	LP-SPL-PB-H	Special Effects Playback LP mode = "H" Output	H
	C,D	OUT	TRICK-H	Special Play back="H" Output	H
3		OUT	REC-CTL	REC-CTL	H/L
4		OUT	D-PB-L	D-PB Output	L
5		OUT	C-DRIVE	Capstan Drive Output	H/Hi-Z
6		IN	LD-C	Loading SW C Input	H/L
7		IN	LD-A	Loading SW A Input	H/L
8		IN	LD-B	Loading SW B Input	H/L
9		IN	LD-D	Loading SW D Input	H/L
10	A,B	-	N.U.	Not Used	-
	C,D	OUT	SKEW-CORRECTION-P	Not Used	PULSE
11	A,B	-	N.U.	Not Used	-
	C,D	OUT	H-A-SW	Head Amp Select Signal	H/L
12		OUT	ROTA	ROTA Output	H/L
13		OUT	RF-SW	RF-SW Output	H/L
14		OUT	C-F/R	Capstan F/R Output	H/L
15	A,B	-	N.U.	Not Used	-

	C,D	OUT	LP-COLOR-CORRECTION-P	Not Used	PULSE
16		-	N.U.	Not Used(GND)	-
17		OUT	D-V /SYNC	Dummy V-Sync Output	H/Hi-Z
18		OUT	SD-L	Not Used(GND)	L
19		OUT	D-REC-H	D-REC Output	H
20		OUT	LP-H	LP-H Output	H
21		OUT	NTSC-L	Not Used	L
22		IN	AFC	Tuner AFC Voltage Input	A/D
23		IN	V-ENV/REC-SW	Video ENV./REC-SAF-SW Input	A/D
24		IN	END-S	Tape END Position Detect	A/D
25		IN	ST-S	Tape Start Position Detect	A/D
26		IN	DEW	Not Used(GND)	A/D
27		IN	KEY IN-2	A/D Key Data Input	A/D
28		-	AV <sub>REF</sub>	AV <sub>REF</sub> A/D Converter Standard Voltage Input (ALL 5V)	-
29		-	AV <sub>SS</sub>	AV <sub>SS</sub> A/D for Converter Power (GND)	-
30		-	AV <sub>DD</sub>	AV <sub>DD</sub> A/D for Converter Power (Back Up 5V)	-
31		IN	KEY IN-1	A/D Key Data Input	A/D
32		IN	PG-DELAY/TEST	PG-DELAY	A/D
33		-	N.U.	Not Used	-
34		IN	T-REEL	Take Up Reel Rotation Signal Input	PULSE
35		IN	P-DOWN-L	Power Down Detection Input	L

Pin No.	Mark	IN/OUT	Signal Name	Function	Active Level
36		IN	C-SYNC	C-SYNC Input	PULSE
37		IN	PB-CTL	PB-CTL Input	PULSE
38		IN	D-PG	D-PG Input	PULSE
39		-	MP	GND	-
40		IN	RESET	System Reset	L
41		-	V <sub>ss</sub>	V <sub>ss</sub> (GND)	-
42		-	XTAL	Main Clock 13.300857MHz (IN)	-
43		-	EXTAL	Main Clock	-
44		IN	D-FG	D-FG Input	PULSE
45		IN	C-FG	C-FG Input	PULSE
46	A,B	-	N.U.	Not Used	-
	C,D	OUT	STILL/SLOW-L	STILL/SLOW "L" Output	L
47	A,B	-	N.U.	Not Used	-
	C,D	OUT	FF/REW-L	FF/REW="L"	L
48		OUT	LM-FWD	Loading Motor FWD Output	H
49		OUT	LM-REV	Loading Motor REV Output	H
50		OUT	C-CONT	Capstan Control	PWM
51		OUT	D-CONT	Drum Control	PWM
52		-	N.U.	Not Used(GND)	-
53	A,B	-	N.U.	Not Used(GND)	-
	C,D	IN	H-A-COMP	Head Amp Comparator Input	H/L
54		OUT	G1	Display Digit Output	H
55		OUT	G2	Display Digit Output	H
56		OUT	G3	Display Digit Output	H
57		OUT	G4	Display Digit Output	H
58		OUT	G5	Display Digit Output	H
59		OUT	G6	Display Digit Output	H
60		OUT	G7	Display Digit Output	H

Pin No.	Mark	IN/OUT	Signal Name	Function	Active Level
61		OUT	G8	Display Digit Output	H
62		OUT	G9	Display Digit Output	H
63		OUT	G10	Display Digit Output	H
64		OUT	A	Display Segment Output	H
65		OUT	B	Display Segment Output	H
66		OUT	C	Display Segment Output	H
67		OUT	D	Display Segment Output	H
68		OUT	E	Display Segment Output	H
69		OUT	F	Display Segment Output	H
70		OUT	G	Display Segment Output	H
71		OUT	H	Display Segment Output	H
72		OUT	I	Display Segment Output	H
73		OUT	J	Display Segment Output	H
74		-	N.U.	Not Used	-
75	A,B	-	N.U.	Not Used	-
	C,D	OUT	NTSC TRICK-H	NTSC Special Play back="H" Output	H
76	A,B	-	N.U.	Not Used	-
	C,D	OUT	LP-SPL-PB-H	Special Effects Playback LP="H" Output	-
77		OUT	NAP-H	Not Used	H
78		-	-28V	-28V	-
79		-	N.U.	Not Used(+5V)	-
80		-	N.U.	Not Used(+5V)	-
81		-	N.U.	Not Used(+5V)	-
82		IIN	MESEC AM-IN-H	Not Used	H
83		OUT	MESEC AM-OUT-H	Not Used	H
84		OUT	T-DAC	TUNING Voltage Control for PWM Output	PWM

Pin No.	Mark	IN/ OUT	Signal Name	Function	Active Level
85		IN	REMOCO N	Remocon Sensor Input	L
86		-	TEX	SUB CLOCK 32KHz (IN)	-
87		-	TX	SUB CLOCK 32KHz (OUT)	-
88		-	V <sub>SS</sub>	V <sub>SS</sub> (GND)	-
89		-	V <sub>DD</sub>	V <sub>DD</sub> (BACK UP 5V)	-
90		-	V <sub>PP</sub>	GND(BACK UP 5V)	-
91	A,C	IN/ OUT	E2 PROM- DATA	MEMORY IC Control DATA	H/L
	B,D	IN/ OUT	VPS/E2 PROM- DATA	VPS IC/MEMORY IC Control DATA	H/L
92	A,C	OUT	E2 PROM- CLK	VPS IC/ MEMORY IC Control CLOCK	H/L
	B,D	IN/ OUT	VPS/E2 PROM- DATA	VPS IC/MEMORY IC Control CLOCK	H/L
93		OUT	D/I	Not Used	H
94		OUT	VL	TUNER BAND Switching Output	L
95		OUT	VH	TUNER BAND Switching Output	L
96		OUT	U	TUNER BAND Switching Output	L
97		OUT	P-ON-L	P-ON Output	L
98		OUT	INSEL	Input Select	H/L
99	A,C	OUT	VPS- CHK	Not Used	H
	B,D	OUT	VPS- CHK	VIDEO MUTE Signal Output	H
100		OUT	NTSC- REC-H	Not Used	-

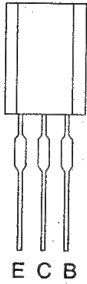
**Notes:**

Abbreviation for Active Level

PWM – Pulse Wide Modulation,

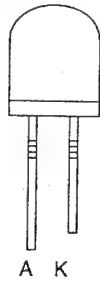
A/D -- Analog - Digital Converter

# LEAD IDENTIFICATION

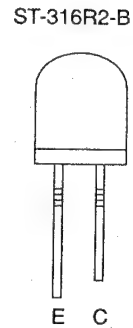


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2SC536SP(E,F,G)  
2SC3400  
2SC2839(E,F)  
KRC103M  
KSR2205  
2SA1654  
KSR2203  
KSR2208  
2SA1347  
KRA103M  
KRC106M  
2SSC4133  
KSR1214

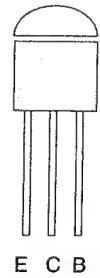
KSR1203  
KTA1267(Y,GR)  
KSA1175(Y,G)  
KTC3199(Y,GR)  
KSC2785(Y,G)  
KTA1266(Y,GR)  
2SA1317(S,T)  
2SD400(F)  
KTC3193(Y)  
KRA109M  
KSR2205  
2SA1346



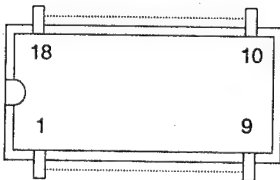
L-1543F3C  
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SID1K10CXM  
LN66A.FN  
SLR-981(A,B,C)



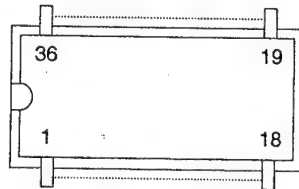
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KTC3203(Y)  
2SC4204  
2SC3576  
2SC3331(T,U)



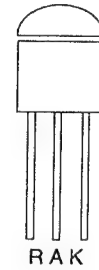
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LA7347

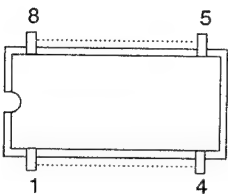


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2SC3866  
2SC5239

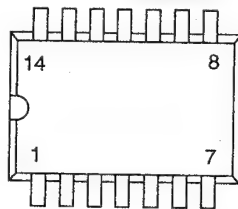


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KA431Z  
AN1431T-(NSC)  
L5431

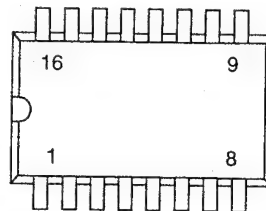
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ST24C02A-B1  
X24C02P



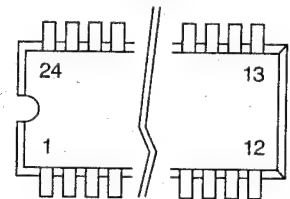
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KA339 KA324  
KIA339P KIA324P  
NJM2901N



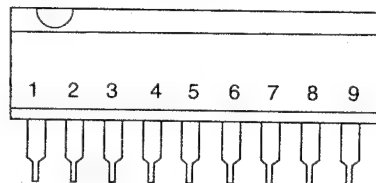
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μPD4052BC  
TC4052BP  
HEF4052BP



LA7286  
LA7578N

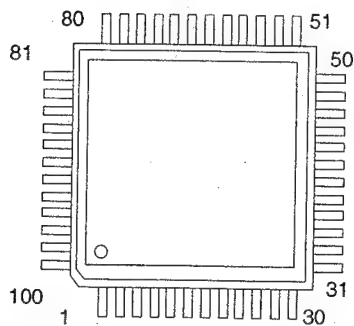


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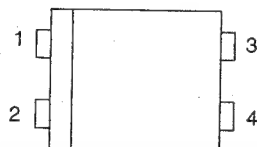


**Note:**  
A: Anode  
K: Cathode  
E: Emitter  
C: Collector  
B: Base  
R: Reference

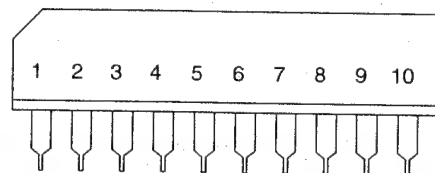
QSMQA0RSN050  
QSMQB0RSN050  
QSMQA0RSN051  
QSMQB0RSN051



PC123F  
PC123  
PC120F  
PC120  
PS2561(1M,1D,1H,1W)



LB1641



# DECK MECHANISM SECTION

## VIDEO CASSETTE RECORDER

**13A-109 / 13A-129 /  
13A-509 / 13A-529**

### Sec. 2: Deck Mechanism Section

- Standard Maintenance
- Alignment for Mechanism
- Disassembly/Assembly of Mechanism
- Front Loading Assembly
- Alignment Procedures of Mechanism

## TABLE OF CONTENTS

Standard Maintenance.....	2-1-1
Service Fixtures and Tools.....	2-2-1
Mechanical Alignment Procedures .....	2-3-1
Disassembly / Assembly Procedures of Deck Mechanism .....	2-4-1
Front Loading Assembly .....	2-4-9
Alignment Procedures of Mechanism .....	2-4-12

# STANDARD MAINTENANCE

## Service Schedule of Components

H: Hours    ○: Check    ●: Change

Deck		Periodic Service Schedule			
Ref. No.	Part Name	1,000 H	2,000 H	3,000 H	4,000 H
B2	Cylinder Assembly	○	●	○	●
B3	Loading Motor			●	
B6	Pinch Roller Arm Assembly		●		●
B8	Pulley Assembly		●		●
B21	Loading Belt		●		●
B27	Band Brake Assembly		●		●
B28	Main Brake S Assembly		●		●
B29	Main Brake T Assembly		●		●
B30	T Brake Arm Assembly		●		●
B31	ACE Head Assembly			●	
B32, B339	Reel Base Assembly			●	
B37	Capstan Motor		●		●
B52	Capstan Belt		●		●
B54	Ground Brush Assembly			●	
B73	FE Head CBA (See Deck Electrical Parts List)				
B132	Clutch Assembly		●		●
B133	Arm Idler Assembly		●		●

### Notes:

1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / Audio Control Head / Full Erase Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.
3. For the reference numbers listed above, refer to Deck Exploded Views.



## Cleaning

### Cleaning of Video Head

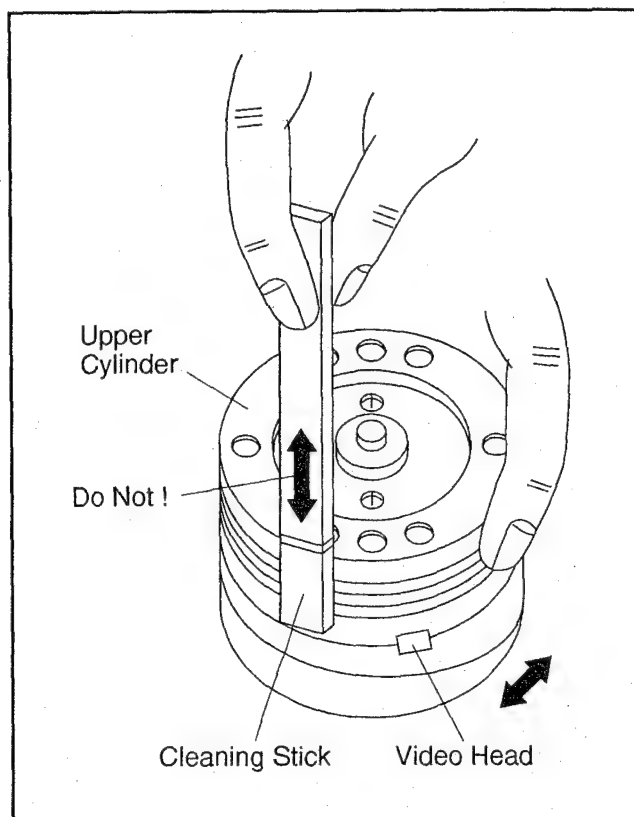
Clean the head with a head cleaning stick or chamois skin.

#### Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois skin and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

#### Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois skin.



### Cleaning of Audio Control Head

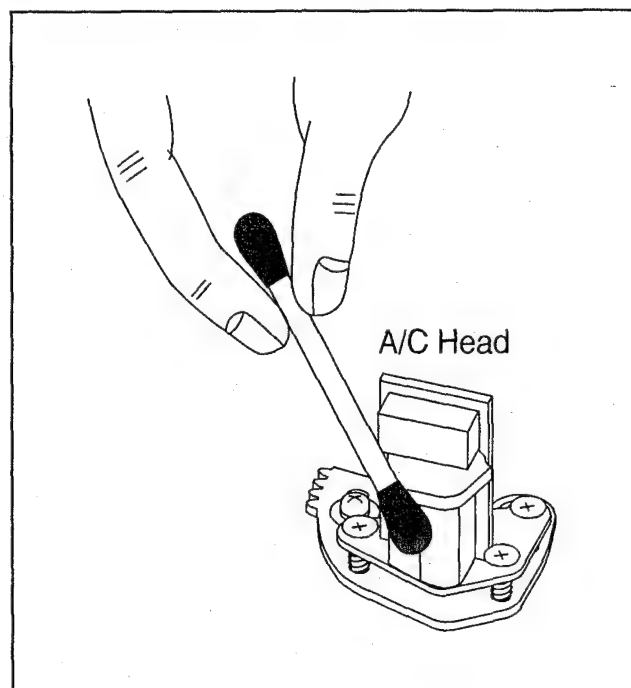
Clean the head with a cotton swab.

#### Procedure

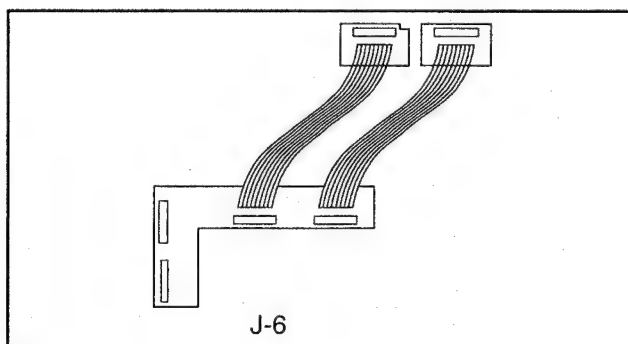
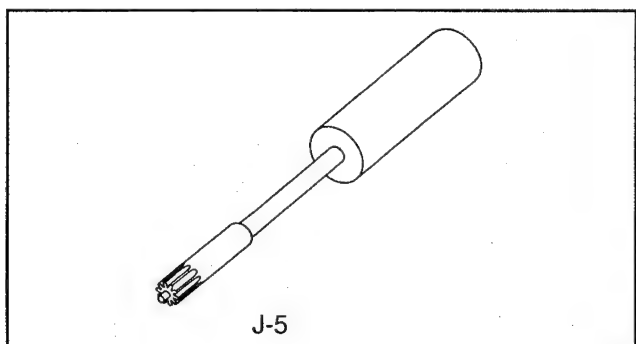
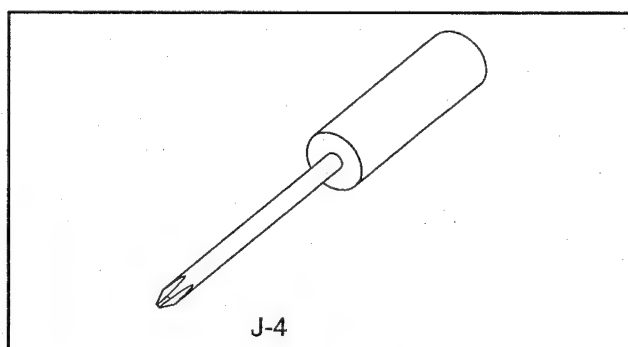
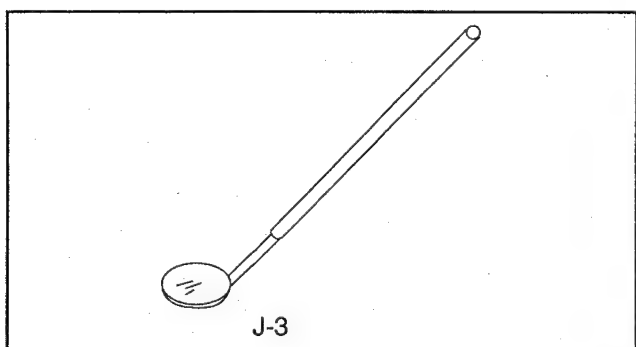
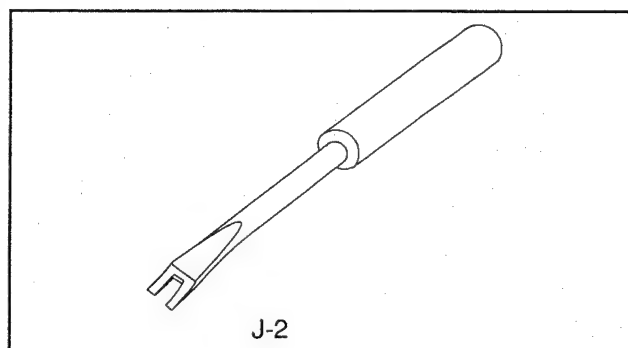
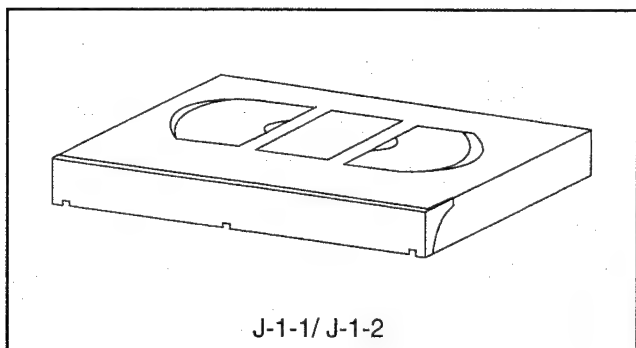
1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the audio control head. Be careful not to damage the upper drum and other tape running parts.

#### Notes:

1. Avoid cleaning the audio control head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.



## SERVICE FIXTURE AND TOOLS



Ref. No.	Name	Part No.	Adjustment
J-1-1	Alignment Tape	FL6A	Electrical Adjustments
J-1-2	Alignment Tape	FL6N8 (1speed only) FL6NS8 (2speed only)	Azimuth and X Value Adjustment of Audio Control Head / Adjustment of Envelope Waveform
J-2	Special Driver, Small	FSJ-0006	Guide Roller
J-3	Mirror	FSJ-0004	Tape Transportation Check
J-4	Azimuth: Screwdriver	Available Locally	A/C Head Height
J-5	X Value Adj. Screwdriver	FSJ-0007	X Value Adjustment
J-6	Deck Extension Cable	N1091XA	All Mechanical and Electrical Adjustments

### Note:

Before starting any adjustment, take the Deck Assembly out of the cabinet and use J-6 to connect the Deck Assembly with the Main CBA.

# MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

## Service Information

### A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Cover.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the Pulley Assembly in the appropriate direction shown in Fig. M1 until the cassette tape is fully loaded. By turning the Pulley Assembly, you are turning the cam indicated in this figure. However, movement of the cam will be very slow. Allow a minute or two to complete this task.

To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Cover.
3. Turn the Pulley Assembly in the appropriate direction shown in Fig. M1 to unload the cassette tape. When turning the Pulley Assembly, please be aware that this is a long process and the cassette will not start getting unloaded instantaneously. Within this long process, before the cassette actually starts getting unloaded, there is a time period during which the moving guide assemblies slide back to their original positions shown in Fig. M1. However, the tape will be left wound around the cylinder. To put the tape back into the cassette, gently turn the Capstan Motor in the direction shown in Fig. M2. Make sure that the tape is completely placed back in the cassette before the cassette starts getting unloaded. Otherwise the tape hanging out will be caught and damaged by the lid of the cassette when it closes. By turning the Pulley Assembly, you are turning the cam indicated in Fig. M1. As stated, movement of the cam will be very slow. Allow a minute or two to complete this task.

### B. Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.

2. Remove the Top Cover.
3. Turn the Pulley Assembly in the appropriate direction shown in Fig. M1 until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.

## Top View

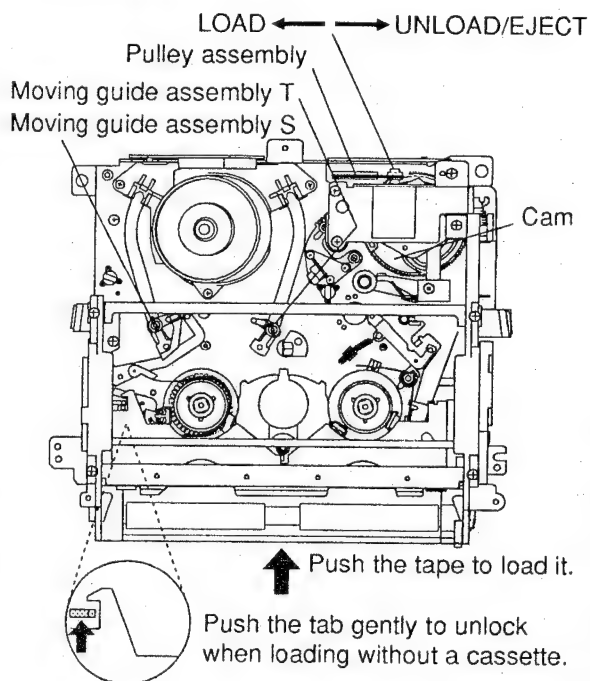


Fig. M1

## Bottom View

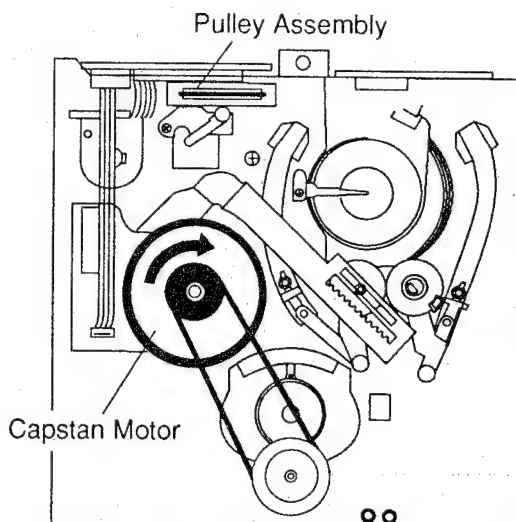


Fig. M2

## 1. Tape Interchangeability Alignment

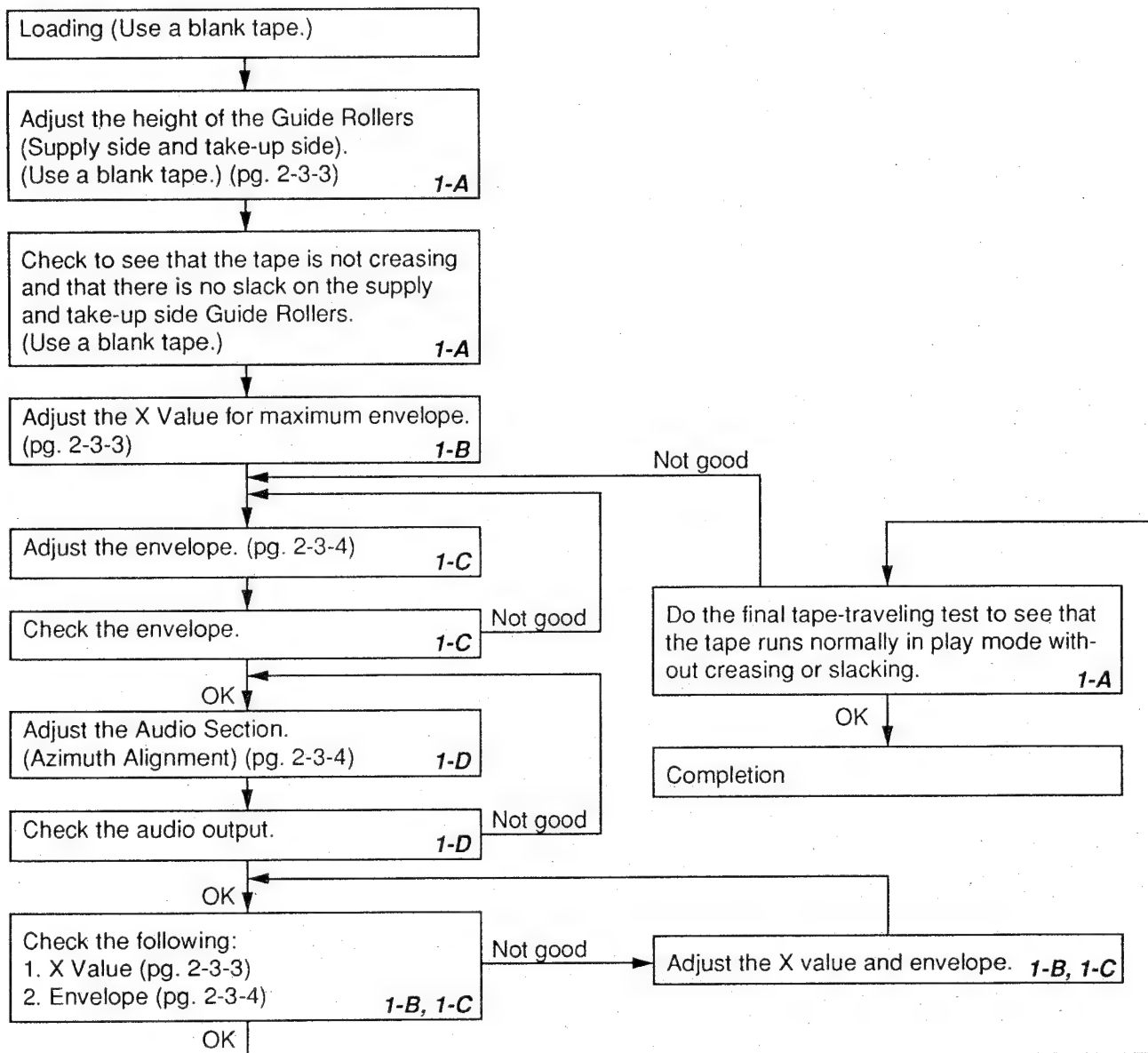
Note: To do these alignment procedures, make sure that the Tracking Control Circuit is set to the center position every time a tape is loaded or unloaded. (Refer to page 2-3-4, procedure 1-C, step 1.)

### Equipment required:

Dual Trace Oscilloscope  
VHS Alignment Tape (FL6NS8)  
Guide Roller Adj. Screwdriver  
X-Value Adj. Screwdriver

Note: Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

### Flowchart of Alignment for tape traveling



## 1-A. Preliminary/Final Checking and Alignment of Tape Path

### Purpose:

To make sure that the tape path is well stabilized.

### Symptom of Misalignment:

If the tape runs unstable, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Play back a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig M3 and M4.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. M3 and M5.)

Note: Beneath each Guide Roller, there is a small screw. (Refer to Fig. M5.) This screw works

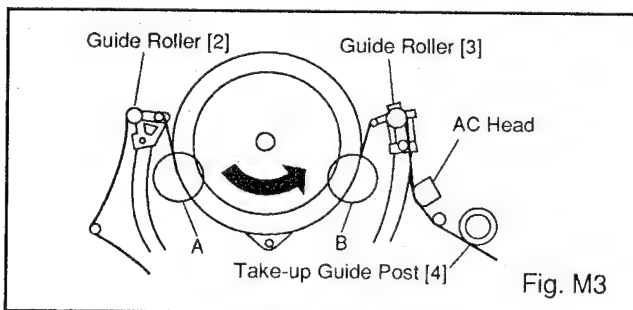


Fig. M3

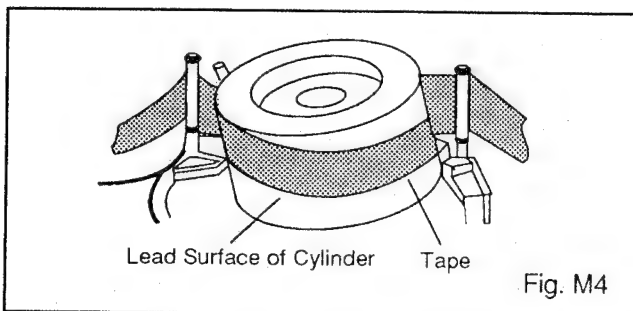


Fig. M4

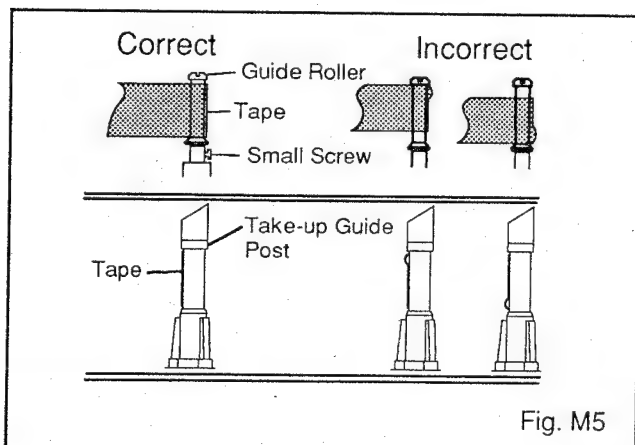


Fig. M5

to apply adequate torque to the shaft of each Guide Roller so that the Guide Roller turns properly. Even when adjusting the height of the Guide Roller(s), do not touch these two small screws.

3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and AC Head. (Fig. M3 and M5)
4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the AC Head. (Fig. M6)

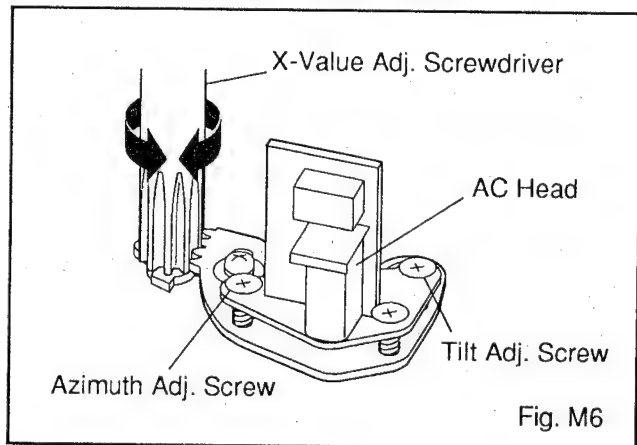


Fig. M6

## 1-B. X Value Alignment

### Purpose:

To align the Horizontal Position of the Audio/Control Head.

### Symptom of Misalignment:

If the Horizontal Position of the Audio/Control Head is not properly aligned, maximum envelope cannot be obtained at the Neutral position of the Tracking Control Circuit.

1. Set the Tracking Control Circuit to the center position by pressing CH UP and DOWN buttons on VCR simultaneously (Refer to note on page 2-3-4.)
2. Connect the oscilloscope to TP (C-PB) and TP (CTL) on the Main CBA. Use TP (RF-SW) as a trigger.
3. Play back the Gray Scale of the Alignment Tape (FL6NS8) and confirm that the PB FM signal is present.
4. Use the X-Value Adj. Screwdriver so that the PB FM signal at TP (C-PB) or TP of AUDIO OUT is maximum. (Fig.M6)
5. Press CH UP button on VCR until CTL waveform is shifted by approx. +2msec. Make sure that the envelope is simply attenuated (shrinks in height) during this process so that you will know the envelope has been at its peak.
6. Press CH DOWN button on VCR until CTL waveform is shifted from its original position (not the po-

sition achieved in step 5 just above, but the position of CTL waveform until step 4) by approximately -2msec. Make sure that the envelope is simply attenuated (shrinks in height) once CTL waveform passes its original position and is further brought in the minus direction.

7. Set the Tracking Control Circuit to the center position by pressing CH UP and DOWN buttons on VCR simultaneously.

### 1-C. Checking/Adjustment of Envelope Waveform

#### Purpose:

To achieve a satisfactory picture and precise tracking.

#### Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

1. Set the Tracking Control Circuit to the center position by pressing both CH UP and DOWN buttons on VCR simultaneously.
2. Connect the oscilloscope to TP (C-PB) on the Main CBA. Use TP (RF-SW) as a trigger.
3. Play back the Gray Scale on the Alignment Tape (FL6NS8). Adjust the height of Guide Rollers [2] and [3] (Fig.M3) watching the oscilloscope display so that the envelope becomes as flat as possible. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
4. If the envelope is as shown in Fig. M7, adjust the height of Guide Roller [2] (Refer to Fig.M3) so that the waveform looks like the one shown in Fig. M9.
5. If the envelope is as shown in Fig. M8, adjust the height of Guide Roller [3] (Refer to Fig.M3) so that the waveform looks like the one shown in Fig. M9.
6. When Guide Rollers [2] and [3] (Refer to Fig.M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M9.

Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. M3), check the X Value by pushing the Tracking Control Up or Down buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure center position. The number of pushes UP to achieve 1/2 level of envelope should match the number of pushes DOWN from center. If required, redo the "X Value Alignment."

### 1-D. Azimuth Alignment of Audio/Control Head

#### Purpose:

To correct the Azimuth alignment so that the Audio/Control Head meets tape tracks properly.

#### Symptom of Misalignment:

If the position of the Audio/Control Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Play back the alignment tape (FL6NS8) and confirm that the audio signal output level is 8 kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform of the oscilloscope is at maximum. (Fig. M6)

Dropping envelope level at the beginning of track.

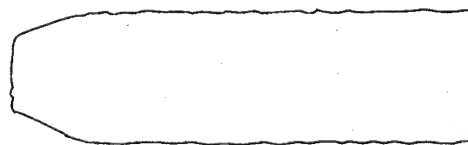


Fig. M7

Dropping envelope level at the end of track.



Fig. M8

Envelope is adjusted properly. (No envelope drop)



Fig. M9



# DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

## Main Mechanism

Before following the procedures described below, be sure to:

1. Remove the deck assembly from the cabinet.  
(Refer to DISASSEMBLY INSTRUCTIONS in Main Section.)
2. Remove Front Loading Assembly from the main mechanism of the deck assembly. (See Fig. DM1.)

All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [33] and [34] in Fig. DM3 on page 2-4-4. When reassembling, follow the steps in reverse order.

STEP /LOC. No.	START- ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Front Loading Assembly	T	DM1	2(S-1), (S-2), *(P-1)	
[2]	[1]	Motor Holder Assembly	T	DM3 DM5 DM6	3(S-4), Loading Belt	(+) Refer to Alignment Sec. Pg. 2-4-12.
[3]	[1]	Loading Motor Assembly	T	DM2 DM3 DM5	2(S-5), CL2693	
[4]	[1]	Cassette Drive Lever Assembly	T	DM3 DM5		(+) Refer to Alignment Sec. Pg. 2-4-12.
[5]	[1]	Pinch Roller Arm Assembly	T	DM3 DM5	(C-1) Pinch Roller Spring	Refer to Alignment Sec. Pg. 2-4-12.
[6]	[1]	Pinch Arm Assembly	T	DM3 DM5		Refer to Alignment Sec. Pg. 2-4-12.
[7]	[7]	Mode SW CBA	B	DM4 DM8	Stopper Boss, *(L-1)	
[8]	[8]	Joint CBA	T/B	DM2 DM3 DM4 DM7 DM8	(S-6), CN2692, CL2693, *CL2691, CL2692	
[9]	[1]	Cam	T	DM3 DM5		(+) Refer to Alignment Sec. Pg. 2-4-12.
[10]	[1]	Pulley Assembly	T	DM3 DM6	(W-1), Loading Belt	(+)
[11]	[11]	Head Amp CBA	T/B	DM2 DM3 DM4 DM8	(S-7), (S-8), (S-22) CN3802, CL3801, CL3802 (S-22 is not applicable to A and B.)	
[12]	[12]	Arm Idler Assembly	T	DM3 DM9	Clutch Shaft Cap, Clutch Bushing	(+)
[13]	[13]	Clutch Assembly	B	DM4 DM9	(C-2), (W-2) Capstan Belt	(+)
[14]	[13]	Capstan Motor Unit	B	DM4 DM10	3(S-9)	
[15]	[1]	M Lever Holder	T	DM3 DM11	(S-10)	(+) Oil, (+) Grease
[16]	[1]	Kick Arm Holder	B	DM4 DM11	Kick Arm Spring	
[17]	[16]	Kick Arm	B	DM4 DM11	Bushing	(+)
[18]	[18]	Mode Change Lever	T	DM3 DM12	*2(L-2)	(+)
[19]	[1]	Main Lever Assembly	T	DM3 DM12 DM15	*(L-3)	
[20]	[20]	Tape Guide Assembly	T	DM3 DM15	*(P-2), *(L-4)	Keep the distance specified in Fig. DM15.
[21]	[21]	ACE Head Assembly	T	DM3 DM14	2(S-11)	

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[22]	[22]	Tension Lever Sub Assembly	T	DM3 DM13 DM22	*(L-5) *(P-6)	Refer to Alignment Sec. Pg. 2-4-14.
[23]	[22]	Band Brake Sub Assembly	T	DM3 DM13	(S-12), *(L-6)	
[24]	[18]	M Brake (S) Lever	T	DM3 DM12 DM16		(+)
[25]	[18]	M Brake (S)	T	DM3 DM16	*(P-3), *(L-7)	(+) When reassem- bling, hook the spring (P-3) after installation of Mode Change Lever.
[26]	[18]	S Brake Arm	T	DM3 DM16	*(P-4), *(L-8)	(+) When reassem- bling, hook the spring (P-4) after installation of Mode Change Lever.
[27]	[18]	M Brake (T) Assembly	T	DM3 DM16		(+)
[28]	[18]	T Brake Arm Assembly	T	DM3 DM16	*(P-5)	(+) When reassem- bling, hook the spring (P-5) after installation of Mode Change Lever.
[29]	[18]	Reel Base Assembly T	T	DM3 DM17	Poly Slider Washer	(+)
[30]	[18]	Reel Base Assembly S	T	DM3 DM17	Poly Slider Washer	(+) Base has slots.
[31]	[31]	Ground Brush Assembly	B	DM4 DM18 DM19	(S-13)	Refer to Alignment Sec. Pg. 2-4-12.
[32]	[11],[31] Only	Cylinder Assembly	T	DM3 DM18	3(S-14)	Refer to Alignment [31] Sec. Pg. 2-4-12.
[33]	[1]	Moving Guide S Assembly	T	DM3 DM20		
[34]	[1]	Moving Guide T Assembly	T	DM3 DM20		
[35]	[1] Only	FE Head	T	DM3 DM20	(S-15)	
[36]	[36]	Main Prism	T	DM3 DM20	(S-16)	
[37]	[1]	Loading Arm M Assembly	B	DM4 DM21	(C-3)	(+) Refer to Alignment Sec. Pg. 2-4-12.
[38]	[1]	Loading Gear A	B	DM4 DM21		(+) Refer to Alignment Sec. Pg. 2-4-12.
[39]	[1]	Loading Gear B	B	DM4 DM21		(+) Refer to Alignment Sec. Pg. 2-4-12.
[40]	[40]	Spring Supporter	B	DM4 DM22	(S-17)	
[41]	[40]	BT Drive Arm	B	DM4 DM12 DM22	(S-18), *(P-6), *(P-7)	
[42]	[42]	Rec Arm Assembly	B	DM4 DM22	(S-19)	
[43]	[42]	Reel Drive Arm	B	DM23	(S-20), (C-4), *(P-8) Drive Arm Roller	
[44]	[42]	Holder Kick Arm	B	DM23	*(P-9)	
[45]	[45]	Cleaning Head	T	DM3		
[46]	[46]	F Brake (2) [C, D only]	B	DM4 DM10	CS Ring	
[47]	[46]	F Brake Guide [C, D only]	B	DM4 DM10	2(S-21) F Brake Spring	

①

②

③

④

⑤

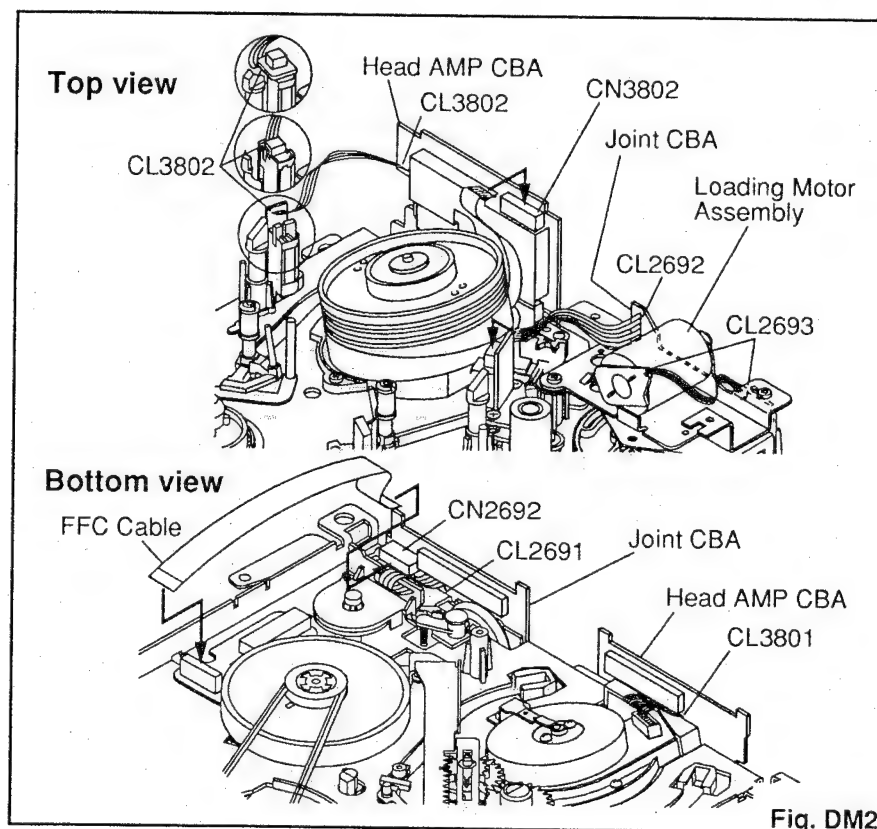
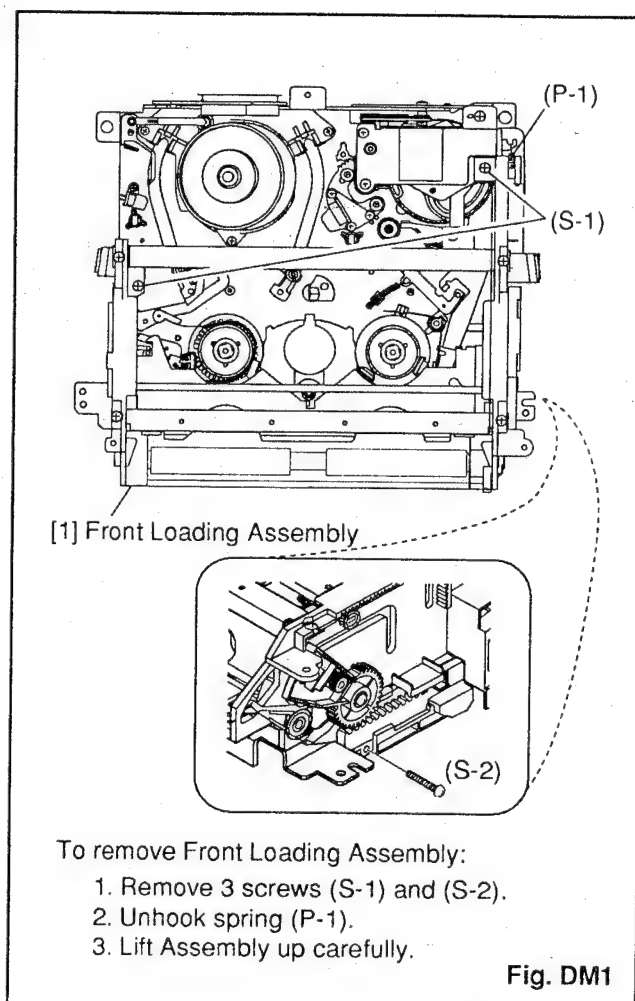
⑥

⑦

- ①: Follow steps in sequence. When reassembling, follow the steps in reverse order.  
These numbers are also used as identification (location) No. of parts in the figures.
- ②: Indicates the part to start disassembly in order to disassemble the part in column (1).
- ③: Name of the part
- ④: Location of the part  
T=Top B=Bottom R=Right L=Left
- ⑤: Figure Number
- ⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.  
P=Spring, W=Washer, C=Cut Washer, S=Screw  
L=Locking Tab  
\*=Unhook, Unlock, Release, Unplug, or Desolder  
e.g. 2(C-2) = two Cut Washers (C-2)  
2(L-2) = two Locking Tabs (L-2)
- ⑦: Adjustment Information for Installation  
(+): Refer to Deck Exploded Views for lubrication information.

### Comparison Chart of Models and Marks

Model	Mark
13A-109	A
13A-129	B
13A-509	C
13A-529	D



### Top View

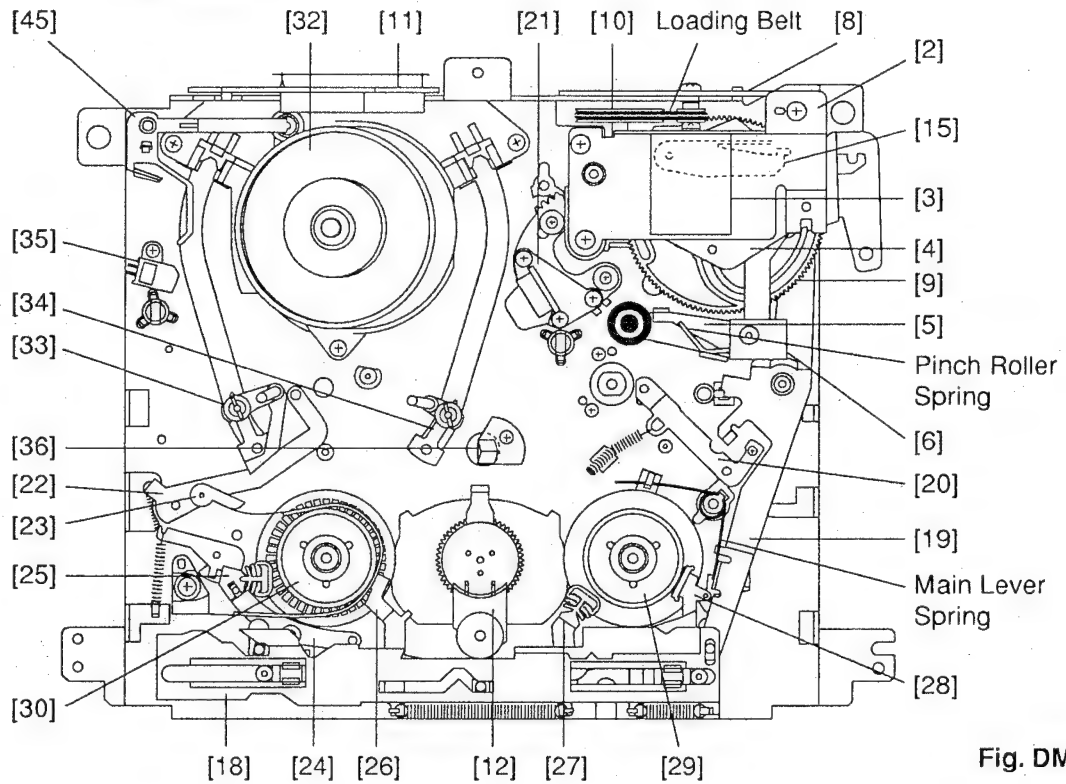


Fig. DM3

### Bottom View

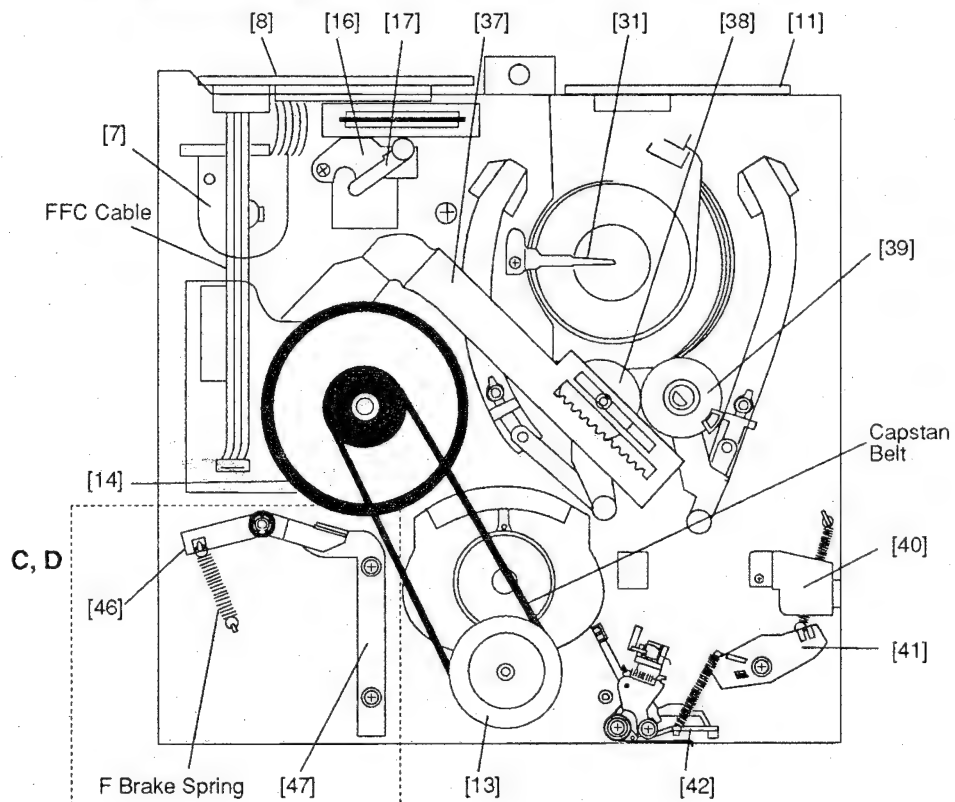


Fig. DM4



When disassembling, unhook Pinch Roller Spring as shown by the arrow. With this spring unhooked, [5] and [6] can be removed from the chassis more easily.

When reassembling [2] through [6] and [9], refer to the Alignment Section, Pg. 2-4-12.

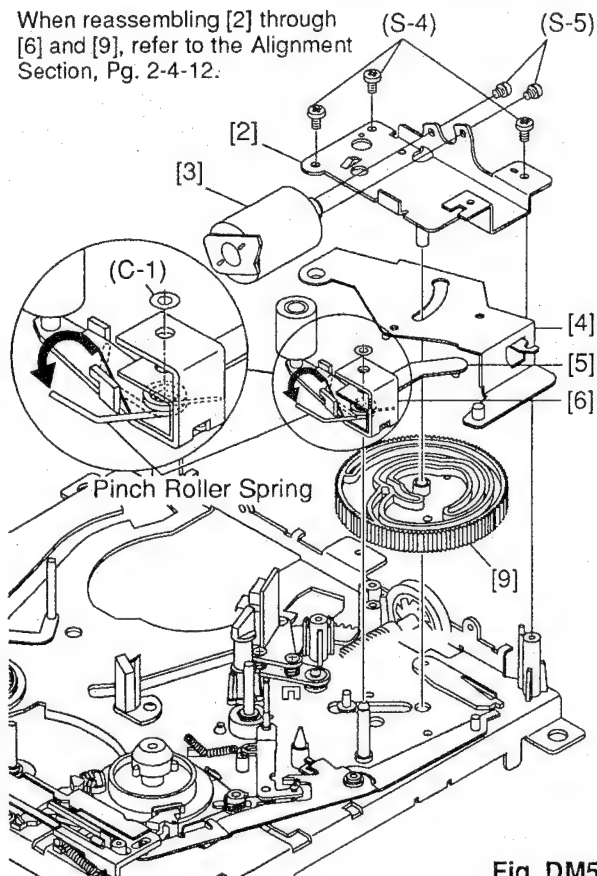


Fig. DM5

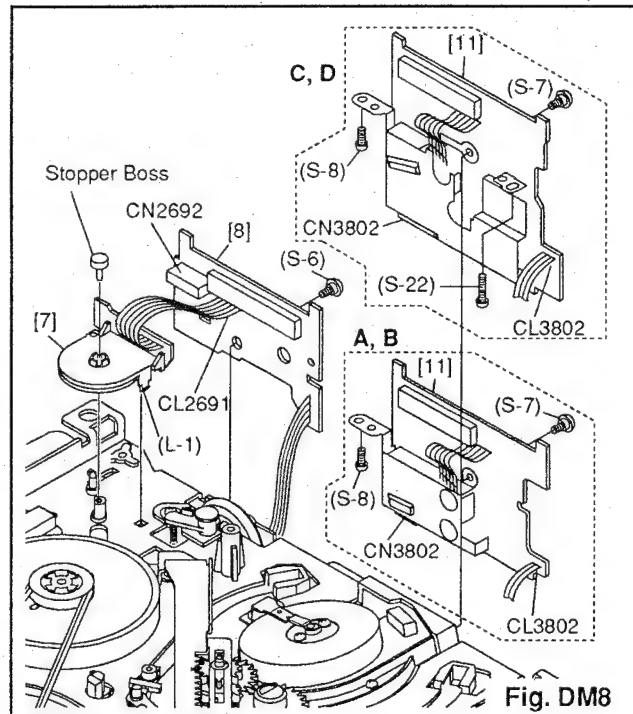


Fig. DM8

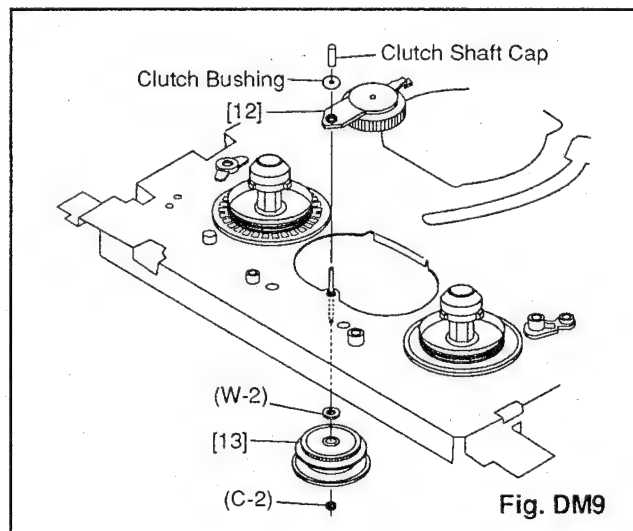


Fig. DM9

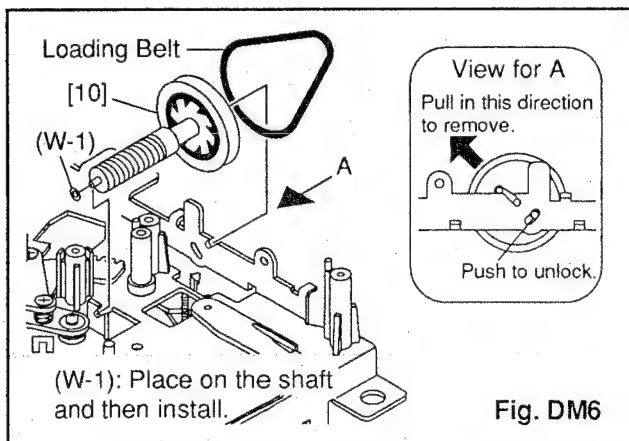


Fig. DM6

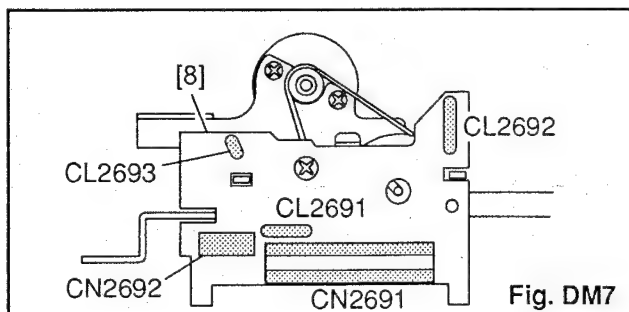


Fig. DM7

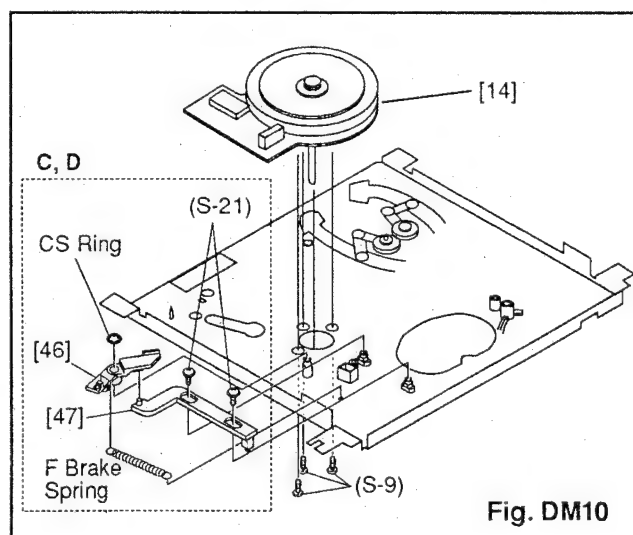
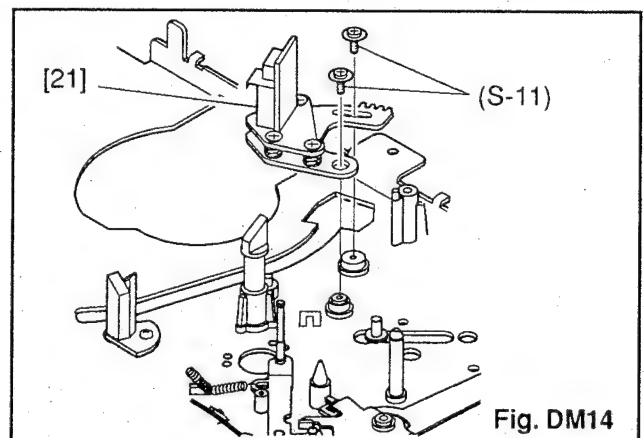
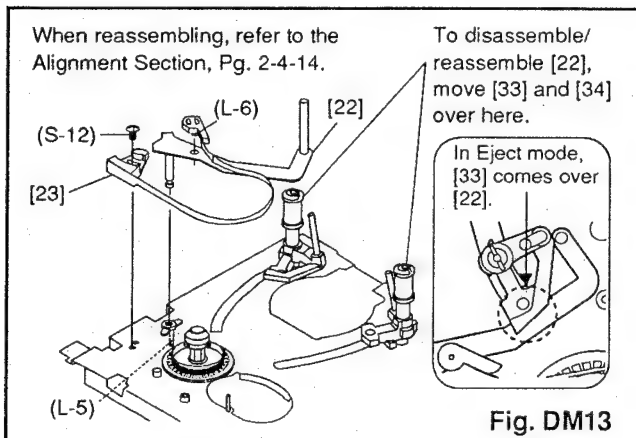
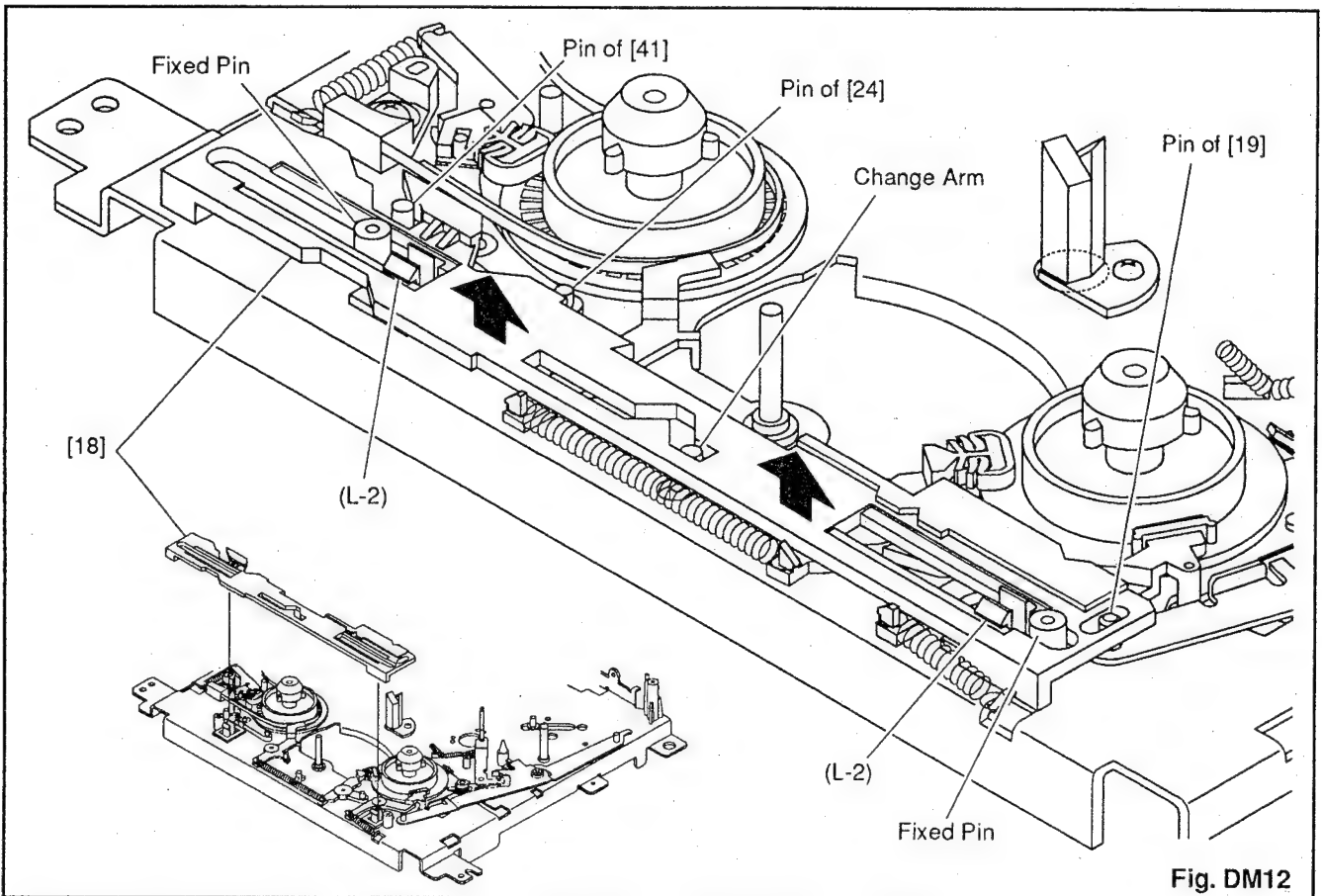
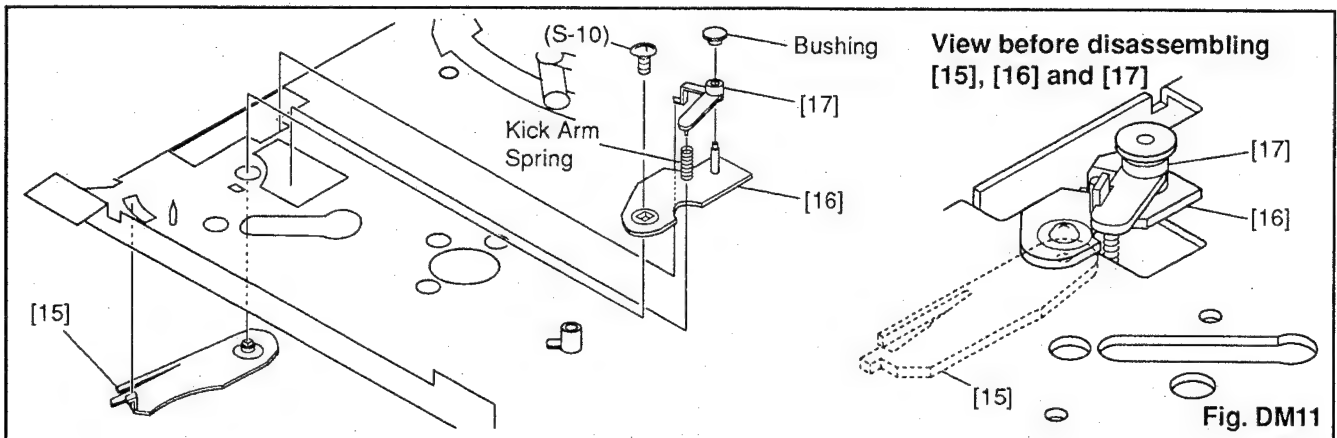
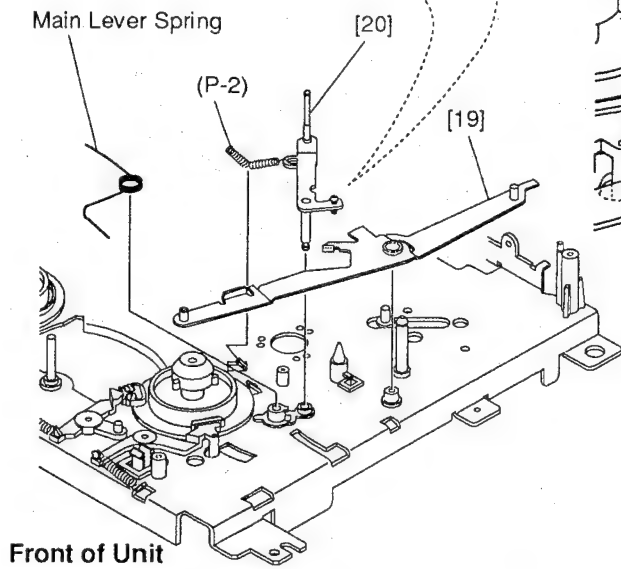


Fig. DM10

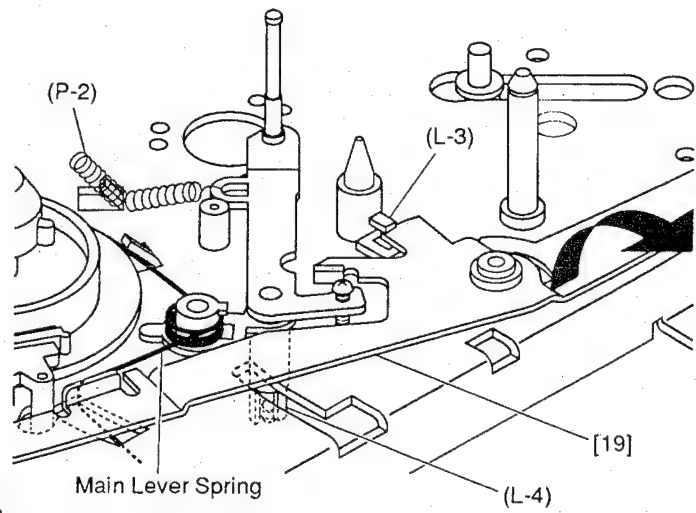


Refer to the Alignment  
Section, Pg. 2-4-12.

Tape Guide  
Adjustment  
 $3.25 \pm 0.1$  mm  
 $0.128 \pm 0.004$  inch



Front of Unit



To remove [19], first lift it up, then pull it to the right side as shown by the arrow.

Fig. DM15

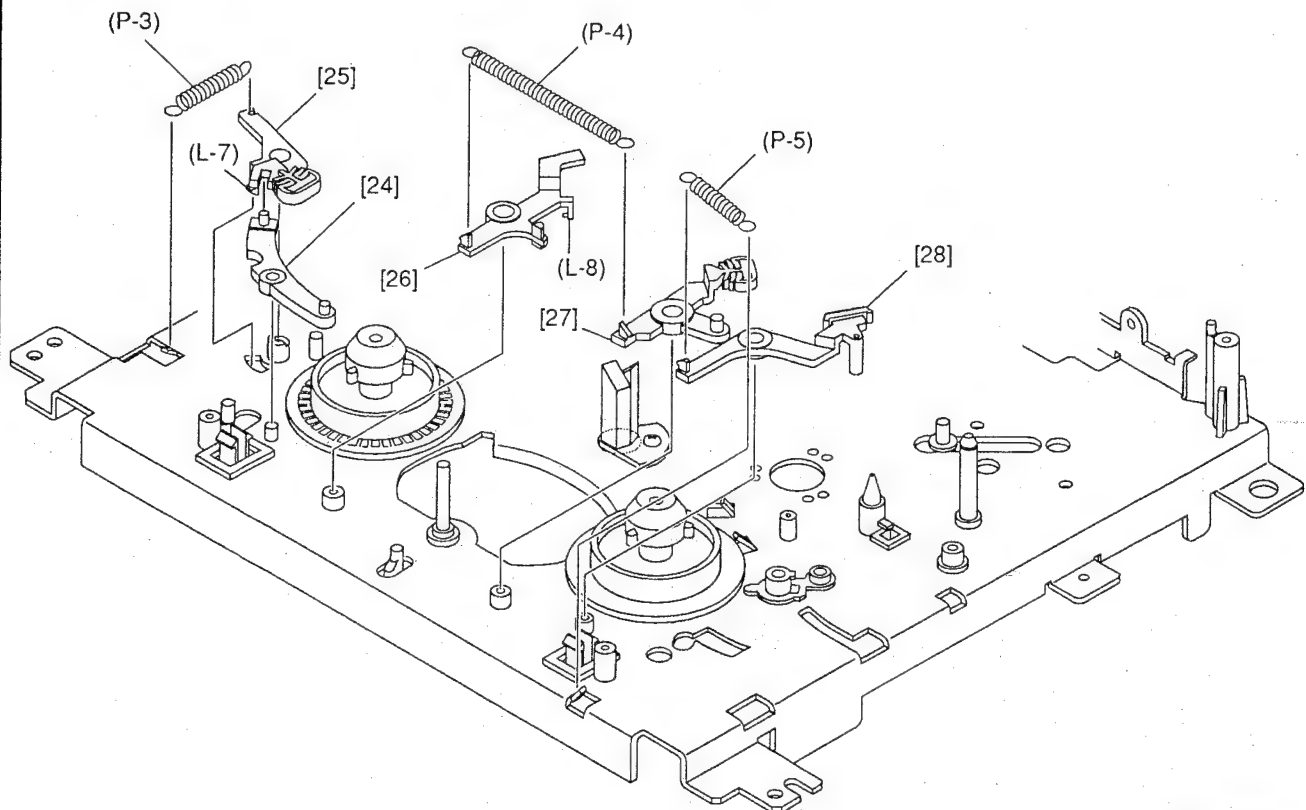
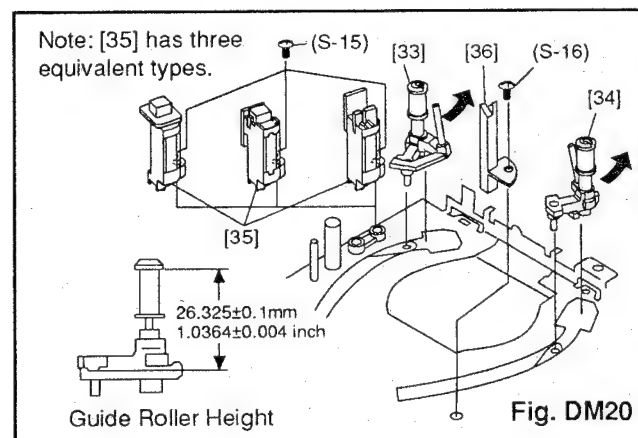
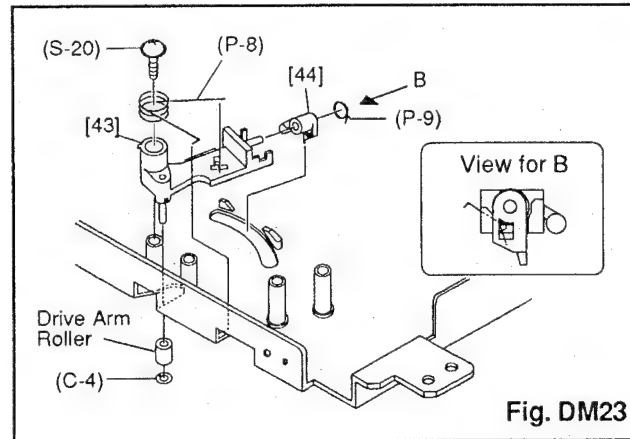
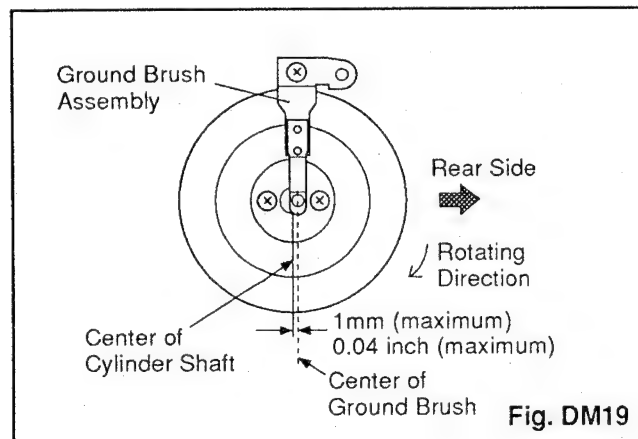
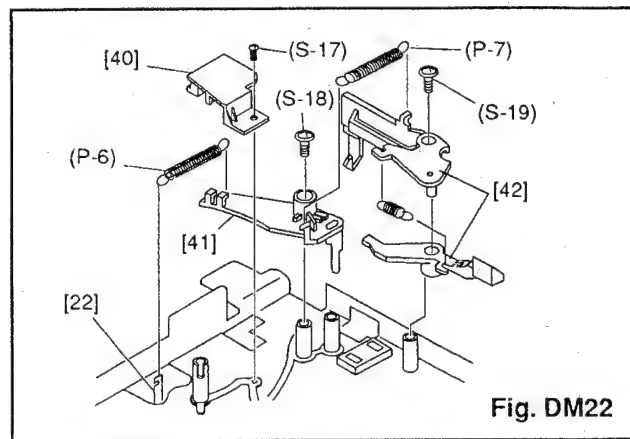
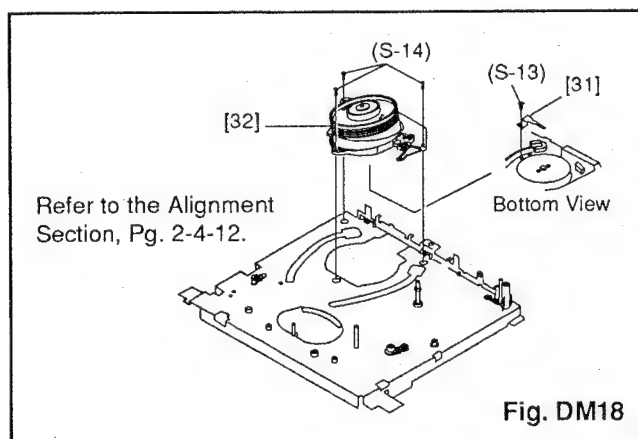
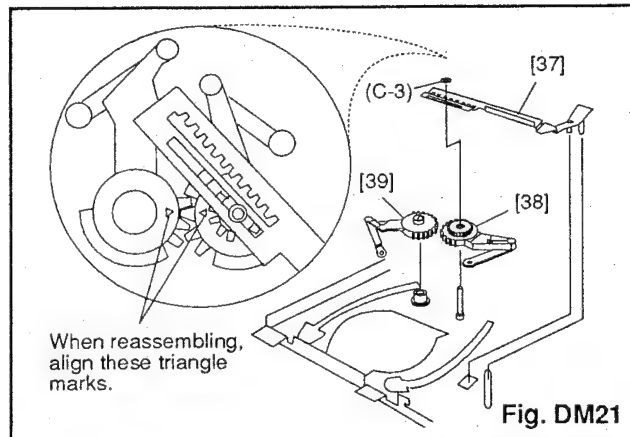
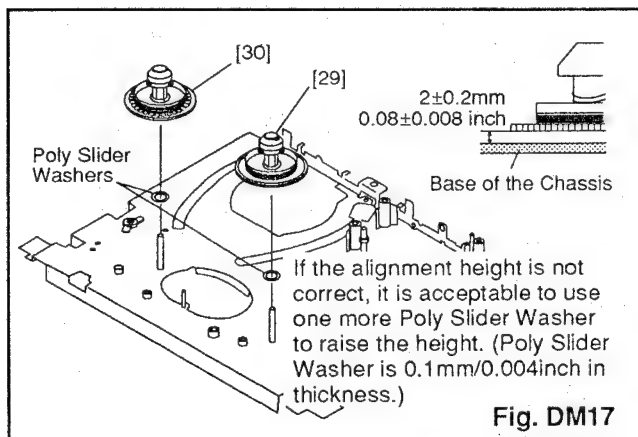


Fig. DM16





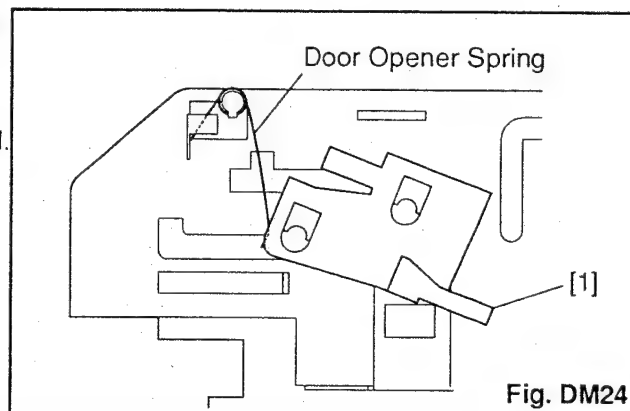
## Front Loading Assembly

Before following the procedures described below, be sure to remove Front Loading Assembly from the main mechanism of the deck assembly. (See Fig. DM1.) When reassembling, start with the unit in Cassette-in mode and follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Door Opener	R	DM24 DM27	*(L-1) Door Opener Spring	(+)
*[2]	[2]	Slider Gear	R (or L)	DM28 DM30	(C-1)	(+)
*[3]	[2]	Slider Gear	L (or R)	DM28 DM30	(C-2)	(+)
		Slider Shaft	T			Install in Eject position.
[4]	[2]	Cassette Drive Gear	R	DM25 DM26 DM28	(S-1), (S-2), Cassette Drive Gear Spring	(+)
[5]	[2]	FL Rack	R	DM25 DM26 DM28		
[6]	[2]	F Door Opener R	R	DM25 DM28 DM29	*(L-2) F Door Opener R Spring	DM29
[7]	[2]	[7a] Front Guide	T	DM25 DM26 DM27 DM28	4(S-3), *2(L-3)	
		[7b] Cassette Holder Assembly				
		[7c] Deck Support B				
		[7d] Deck Support F				
		[7e] Cassette Guide R	R			(+)
		[7f] Cassette Guide L	L			(+)
[8]	[8]	Gear Supporter	L	DM28	(S-4)	
[9]	[9]	Mirror Holder R	R	DM28		
[10]	[10]	Mirror Holder L	L	DM28		

- ①: Follow steps in sequence. When reassembling, follow the steps in reverse order.  
These numbers are also used as identification (location) No. of parts in the figures.
- ②: Indicates the part to start disassembling with in order to disassemble the part in column 1.
- ③: Name of the part
- ④: Location of the part: T=Top B=Bottom R=Right L=Left
- ⑤: Figure Number
- ⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.  
P=Spring, W=Washer, C=Cut Washer, S=Screw,  
\*=Unhook, Unlock, Release, Unplug, or Desolder  
e.g. 2(L-2) = two Locking Tabs (L-2)
- ⑦: Adjustment Information for Installation  
(+): Refer to Deck Exploded Views for lubrication.

\*[2], \*[3]: Slider Gear in Step [2] and that in Step [3] are identical. However, they are divided into two steps because, before reassembling Slider Shaft, one Slider Gear must be preinstalled at either end of Slider Shaft.



Before removing Parts [4], [5], [6] or [7], shift [7b] to  
Cassette-in position.

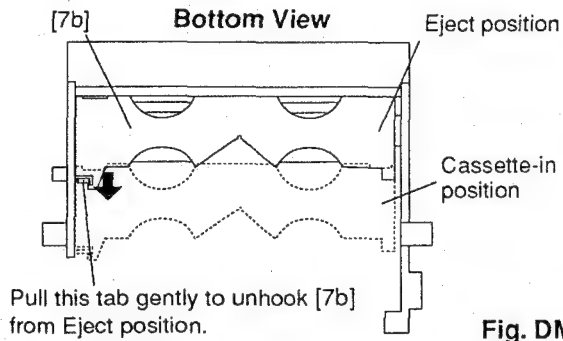


Fig. DM25

Install/remove in Cassette-in position  
to ensure that [7b] is in locked  
position.

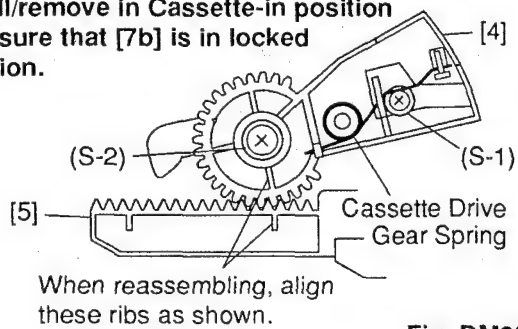


Fig. DM26

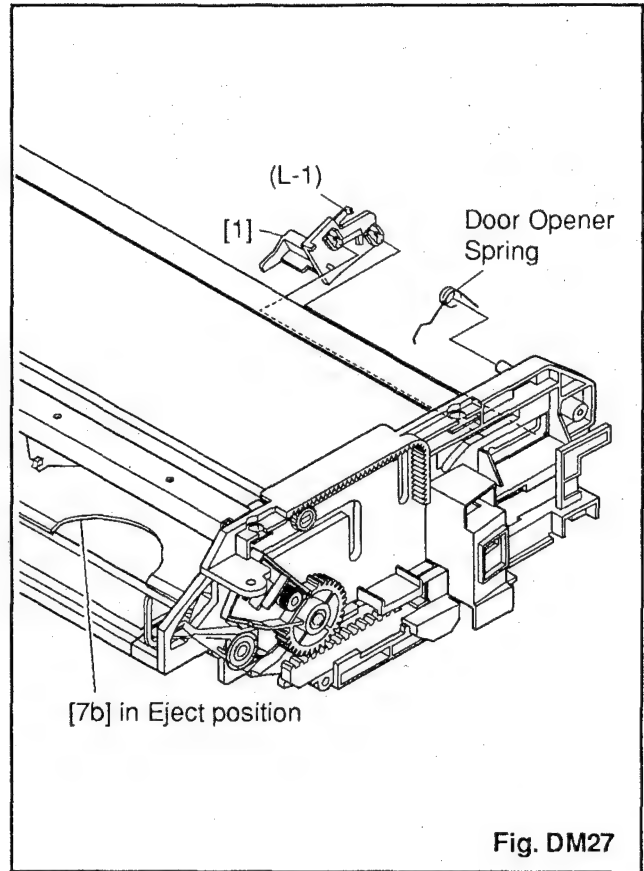


Fig. DM27

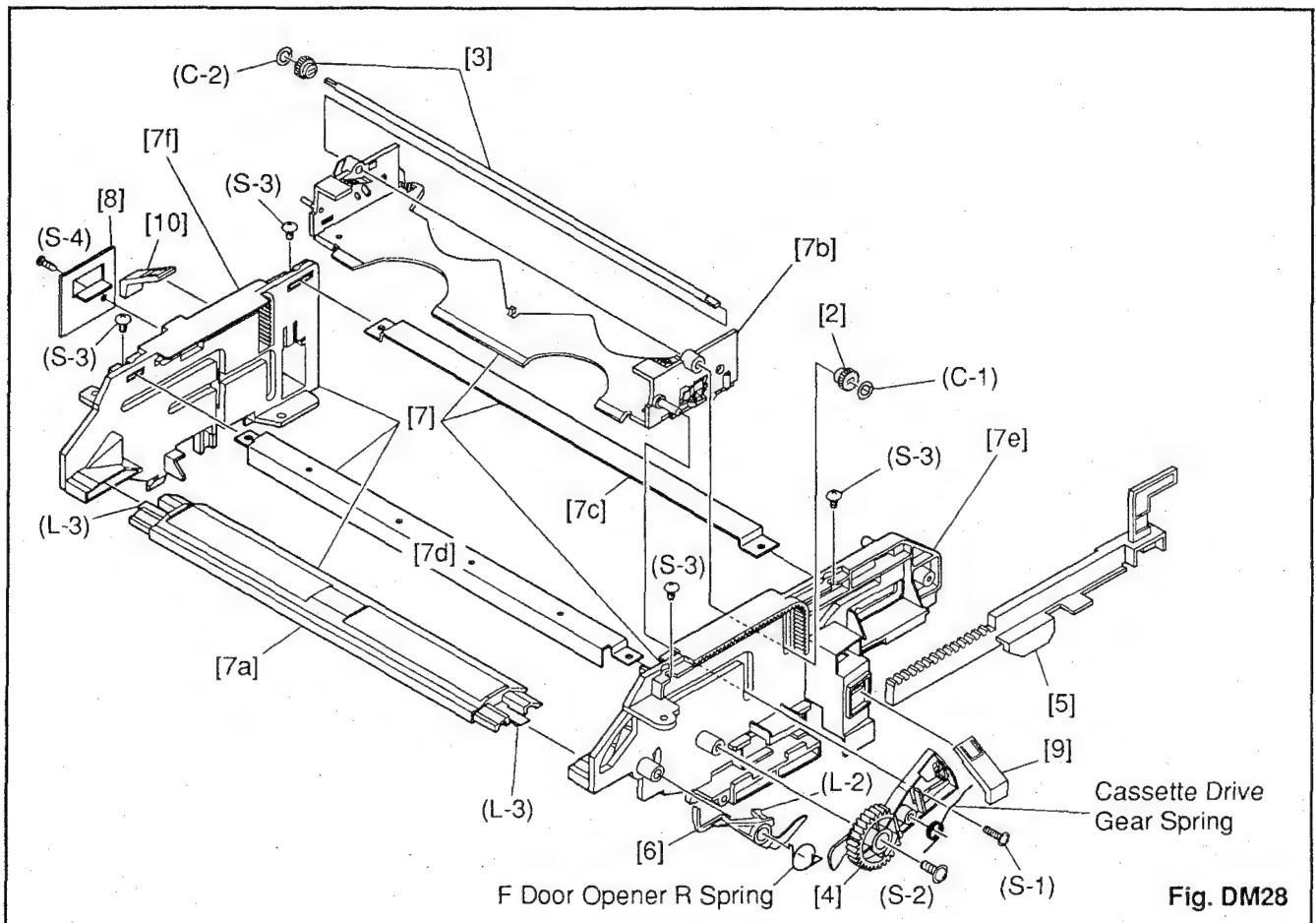
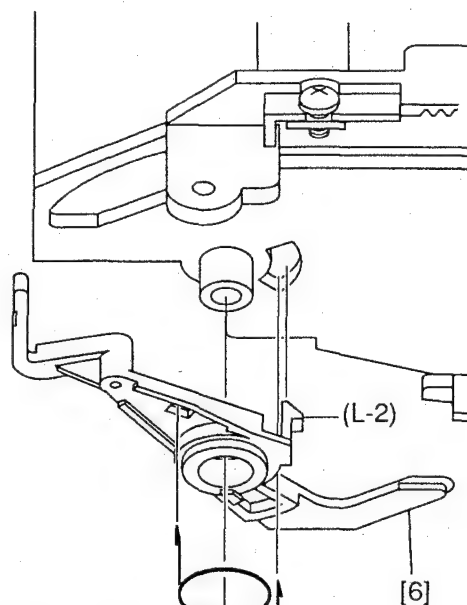
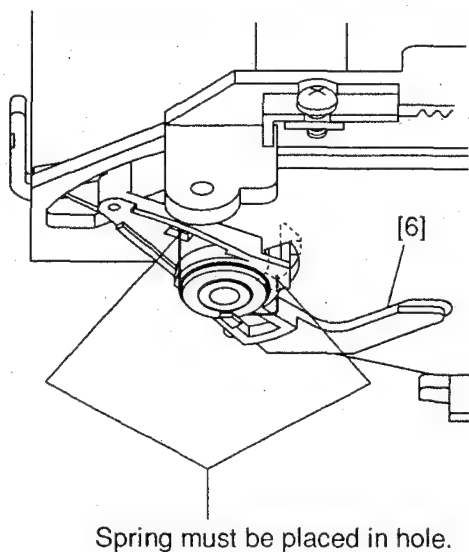


Fig. DM28

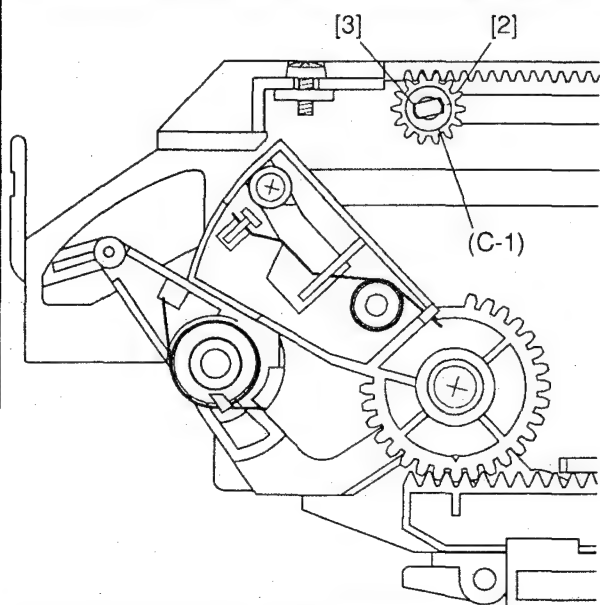
**View before disassembling [6]  
(F Door Opener R Spring Installation)**



F Door Opener R Spring

Fig. DM29

**View before disassembling [2] and [3]  
(Installation of Slider Shaft and Slider Gear)**



**Install [2] and [3] in Eject position.**

(When disassembling, [2] and [3] can be removed either in Eject position or Cassette-in position.)

- This figure shows where [2], [3] and other parts are in Eject position.

Fig. DM30

# ALIGNMENT PROCEDURES OF MECHANISM

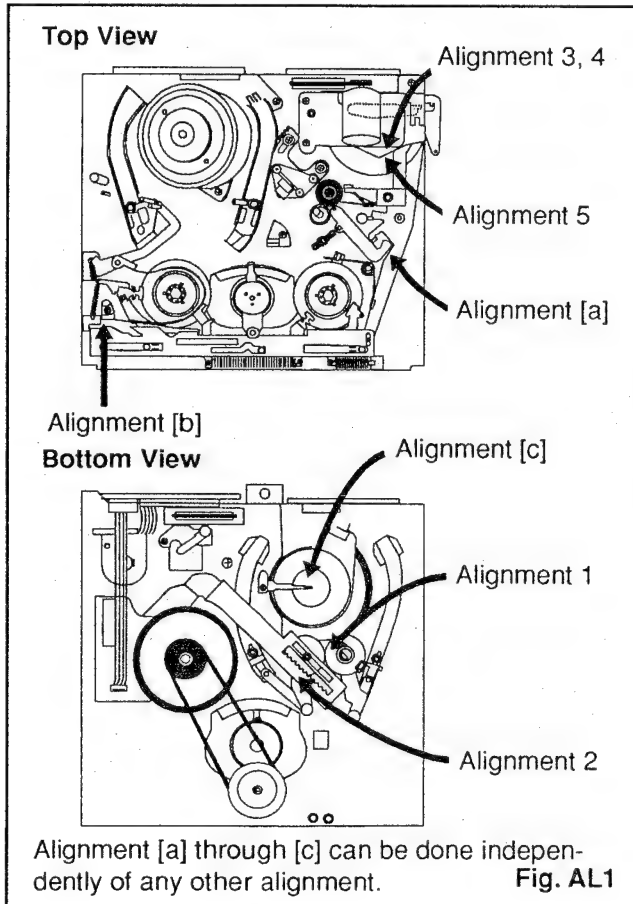
The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.

**All alignments are to be performed with the mechanism in Eject mode**, in the sequence given. Each procedure assumes that all previous procedures have been completed.

## IMPORTANT:

If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

## Alignment points in Eject Position



## Alignment [a]

### Tape Guide Assembly

1. Measurement of the black screw must be as specified in Fig. AL3.

## Alignment 1

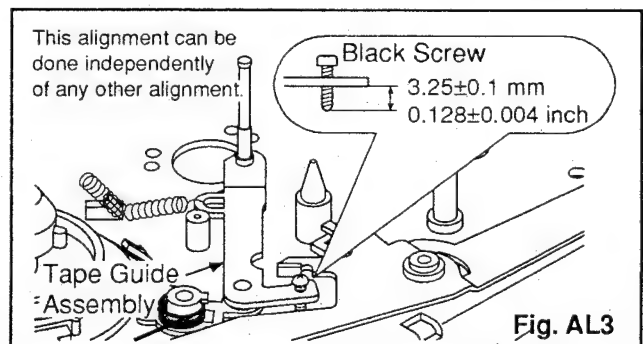
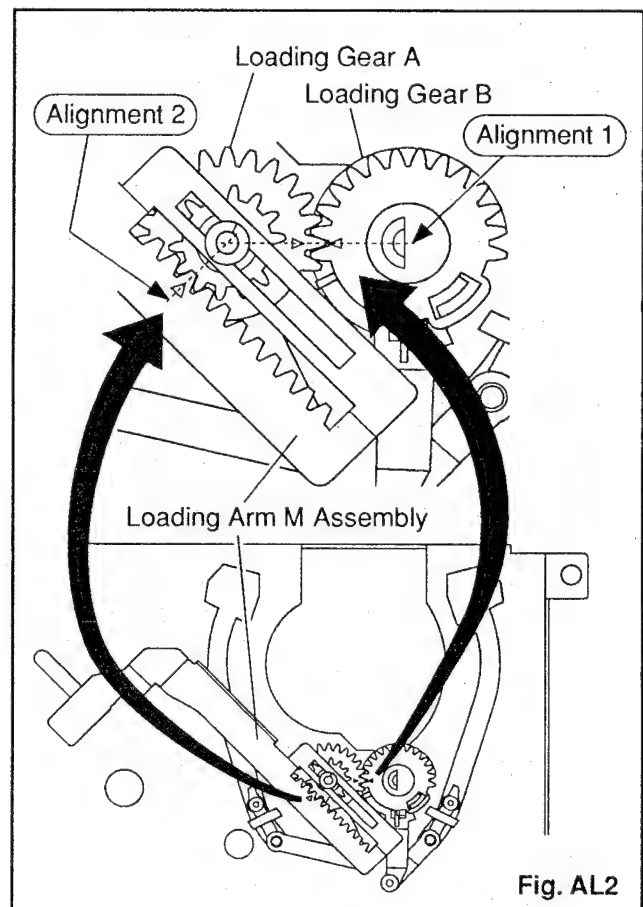
### Loading Gears, A and B

1. Install Loading Gears A and B so that their triangle marks point to each other as shown in Fig. AL2.

## Alignment 2

### Loading Arm M Assembly

1. Keeping the two triangles pointing at each other, install Loading Arm M Assembly so that its tooth with yet another triangle mark is in the position to align with Loading Gear A and the center of the shaft. See Fig. AL2.





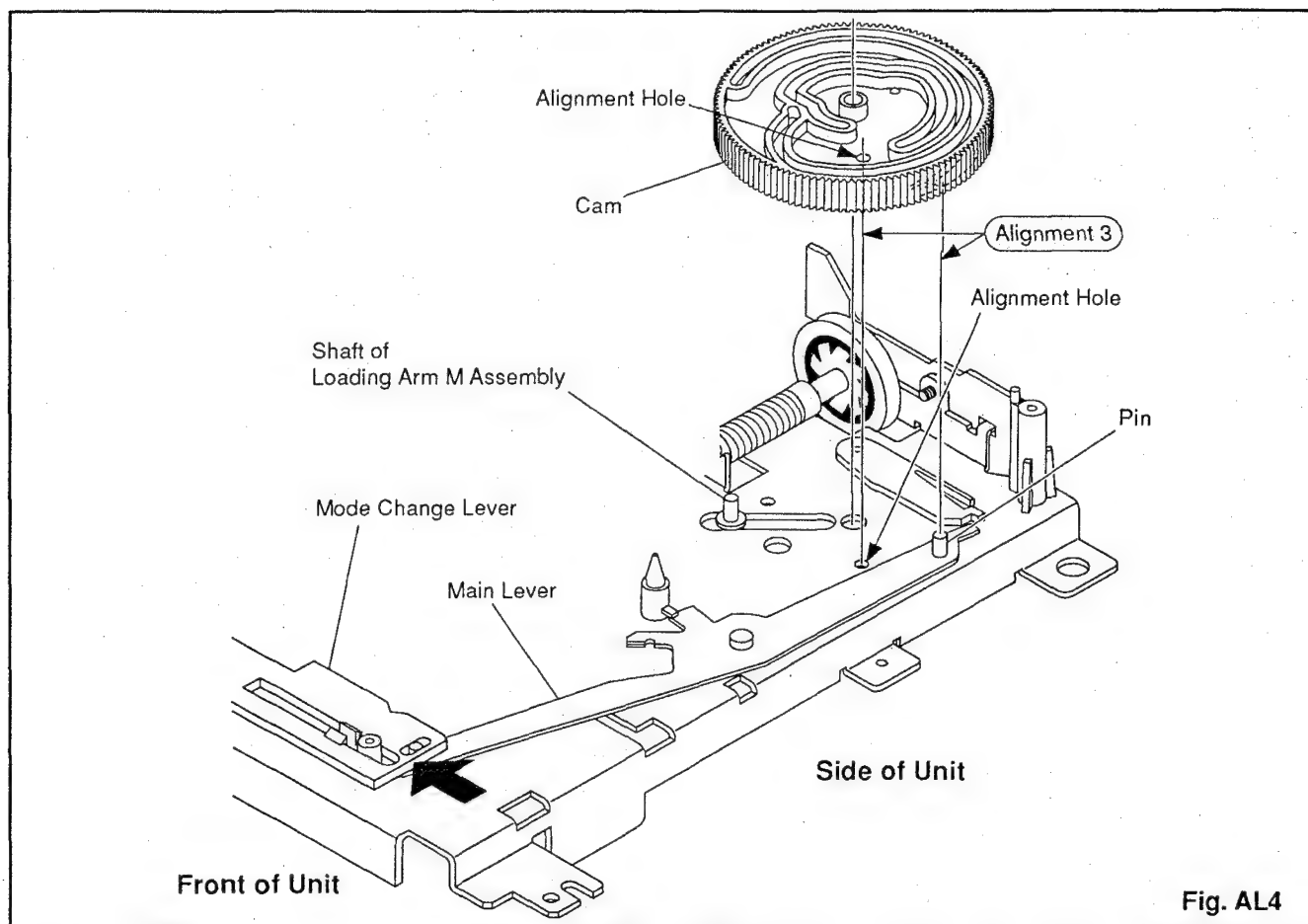


Fig. AL4

### Alignment 3

#### Cam

1. Make sure that the mechanism is in Eject mode so that the shaft of Loading Arm M Assembly is in the position shown in Fig. AL4.
2. Align the alignment hole of the Cam with the alignment hole of the base, holding the Cam just above the base.
3. Carefully keeping these two holes aligned, install the Cam while pushing Mode Change Lever in the direction of the arrow. The Mode Change Lever must be pushed to make the pin on the Main Lever fit in the proper groove in the lower Cam.
4. After installing the Cam, make sure that the alignment hole of the Cam is still aligned with the base hole and that the pin on the Main Lever is inserted into the proper groove of the lower Cam as specified in Fig. AL4.

### Alignment 4

#### Pinch Roller Arm Assembly

1. Ensure that the pin of the Pinch Roller Arm Assembly is positioned in the end of the groove of the upper Cam as shown in Fig. AL5.

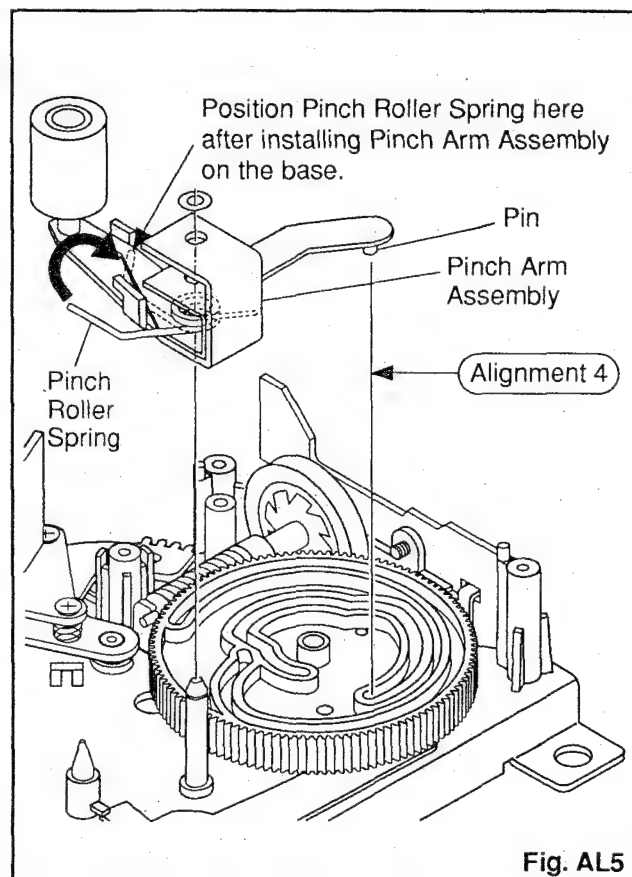
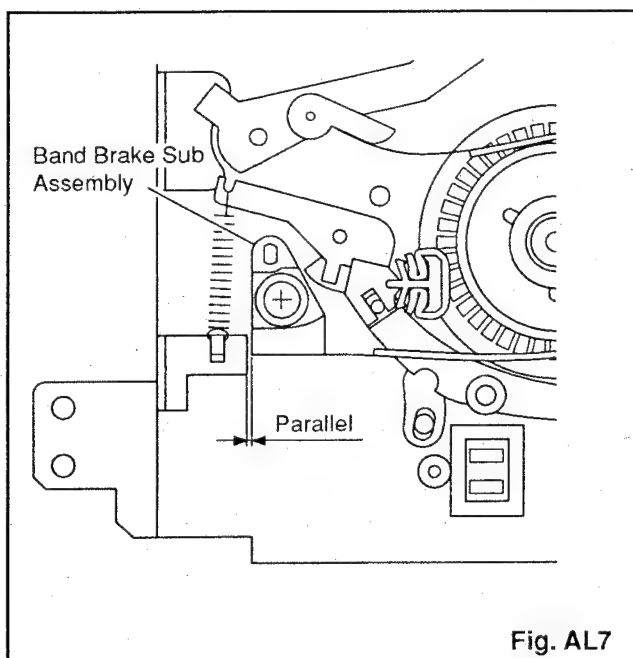
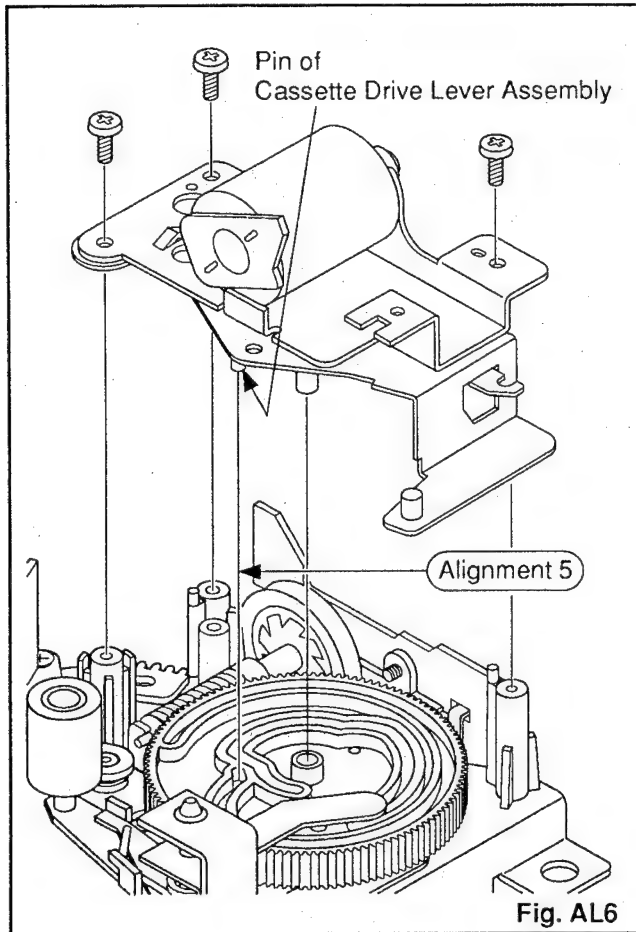


Fig. AL5

### Alignment 5

#### Cassette Drive Lever Assembly

1. Ensure that the pin of the Cassette Drive Lever Assembly is positioned in the groove of the upper Cam as shown in Fig. AL6.



### Alignment [b]

This alignment can be performed independently of any other alignment.

#### Band Brake Sub Assembly

1. Ensure that Band Brake Sub Assembly is positioned parallel to the chassis' notch as shown in Fig. AL7. This measurement can be made by eye.

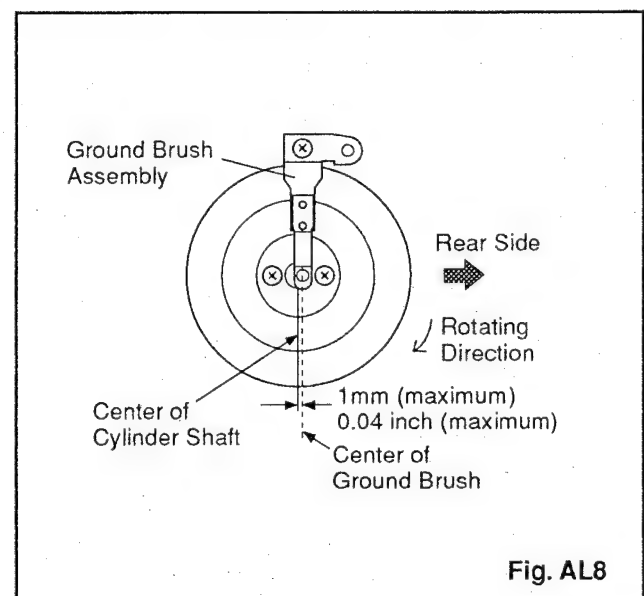
### Alignment [c]

This alignment can be performed independently of any other alignment.

#### Ground Brush Assembly

1. Check to see if the Ground Brush Assembly is properly set in a position equal to or just less than 1mm (0.04 inch) (but never more than 1 mm or 0.04 inch), as measured from the center of the brush to the center of the Cylinder Shaft as shown in Fig. AL8.
2. If this measurement exceeds 1mm (0.04 inch), loosen and refasten the screw of the Ground Brush Assembly. If this is not enough and further adjustment is necessary, loosen and refasten the three screws of Cylinder Assembly. These three screws are shown in Fig. DM18 in DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM.

**Note:** DO NOT install the Ground Brush Assembly in the opposite position (on the left side of the center of the Cylinder shaft), but always within a maximum of 1mm (0.04 inch) to the right side of the center of this shaft.



# **EXPLODED VIEWS AND PARTS LIST SECTION**

## **VIDEO CASSETTE RECORDER**

**13A-109 / 13A-129 /  
13A-509 / 13A-529**

**Sec. 3: Exploded views  
and Parts List Section**


- Exploded views
- Parts List

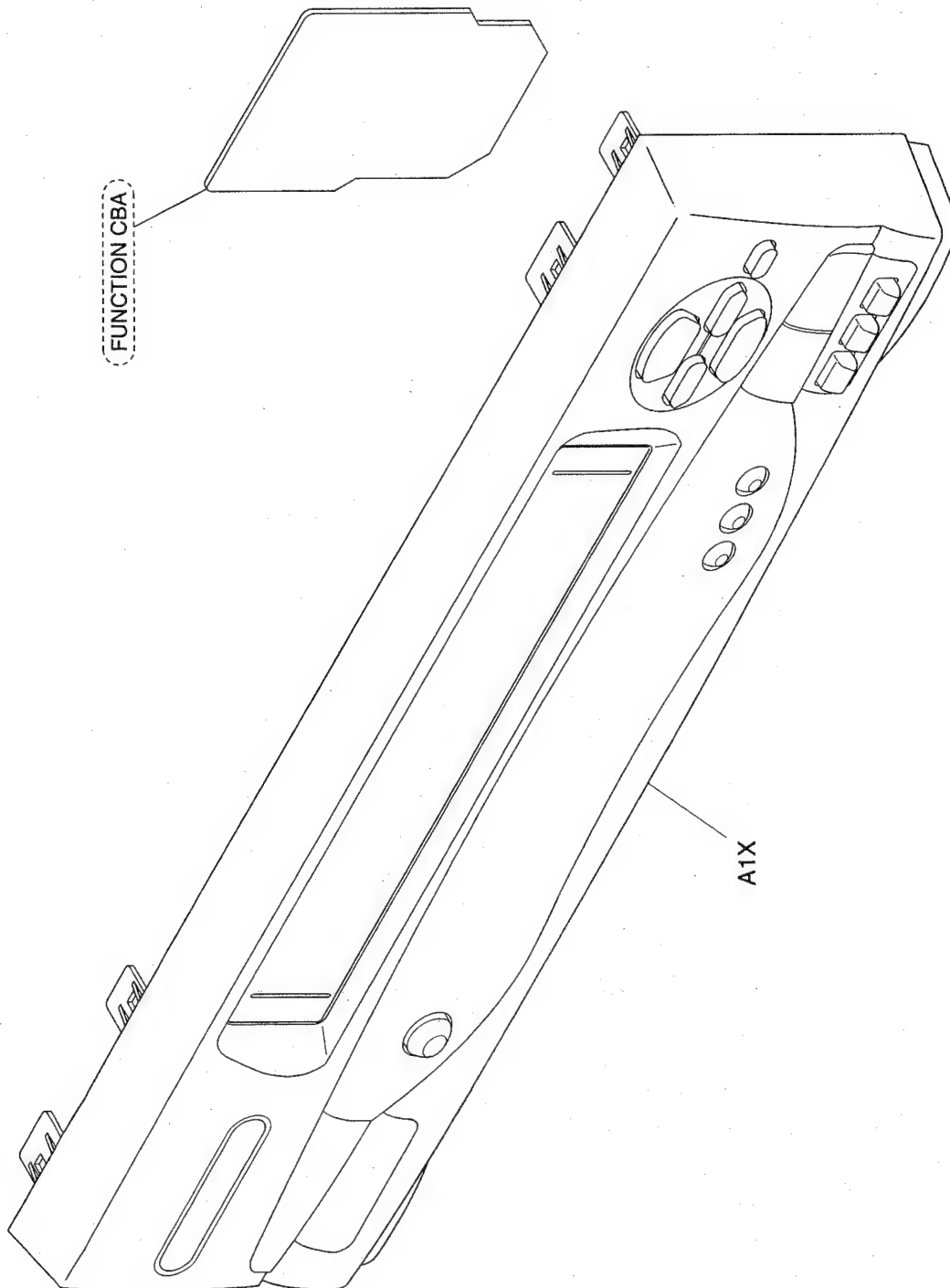
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Mechanical Parts List.....	3-2-1
Electrical Parts List .....	3-3-1
Deck Mechanical Parts List .....	3-4-1
Deck Electrical Parts List .....	3-5-1

## EXPLODED VIEWS

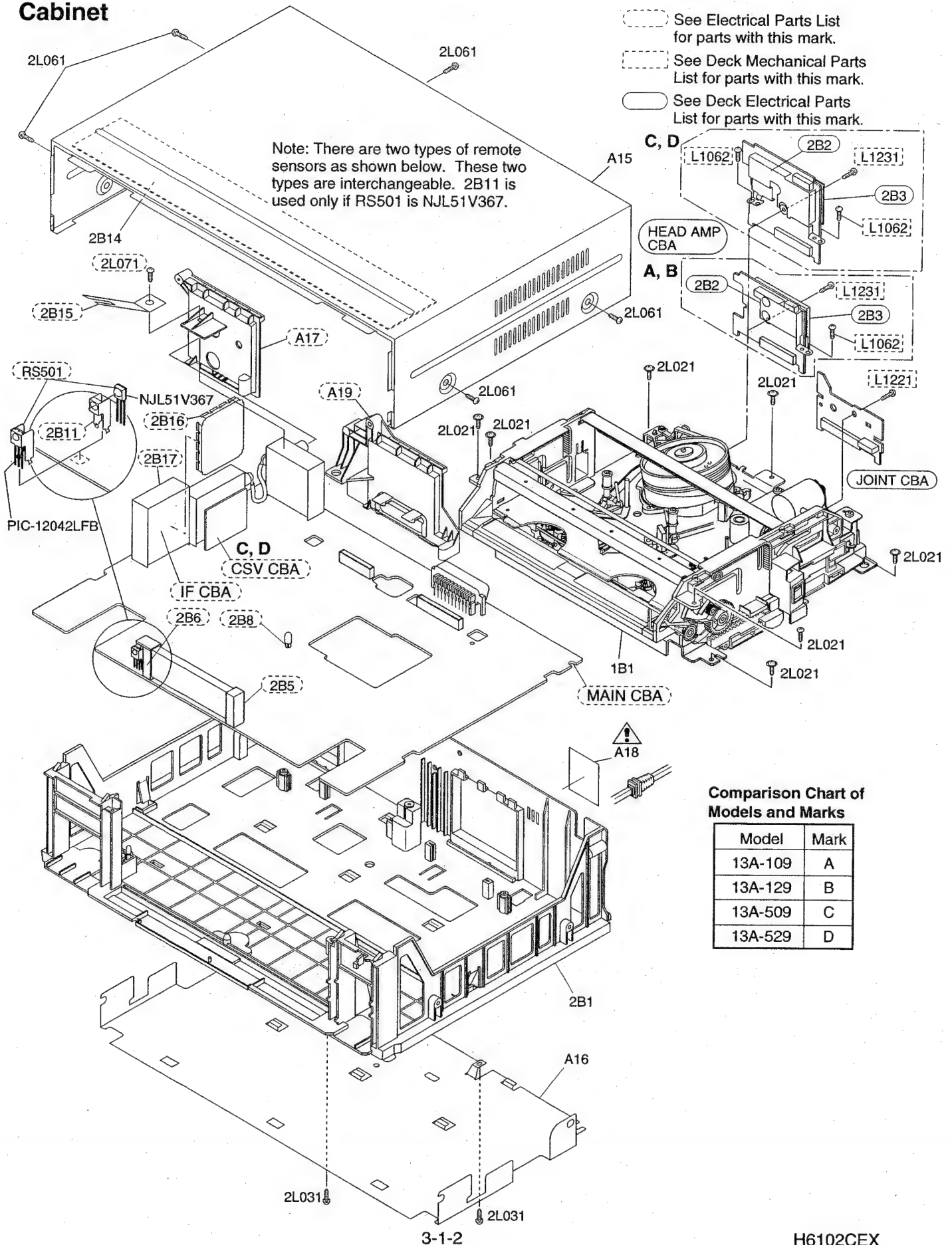
### Front Panel

 See Electrical Parts List  
for parts with this mark.

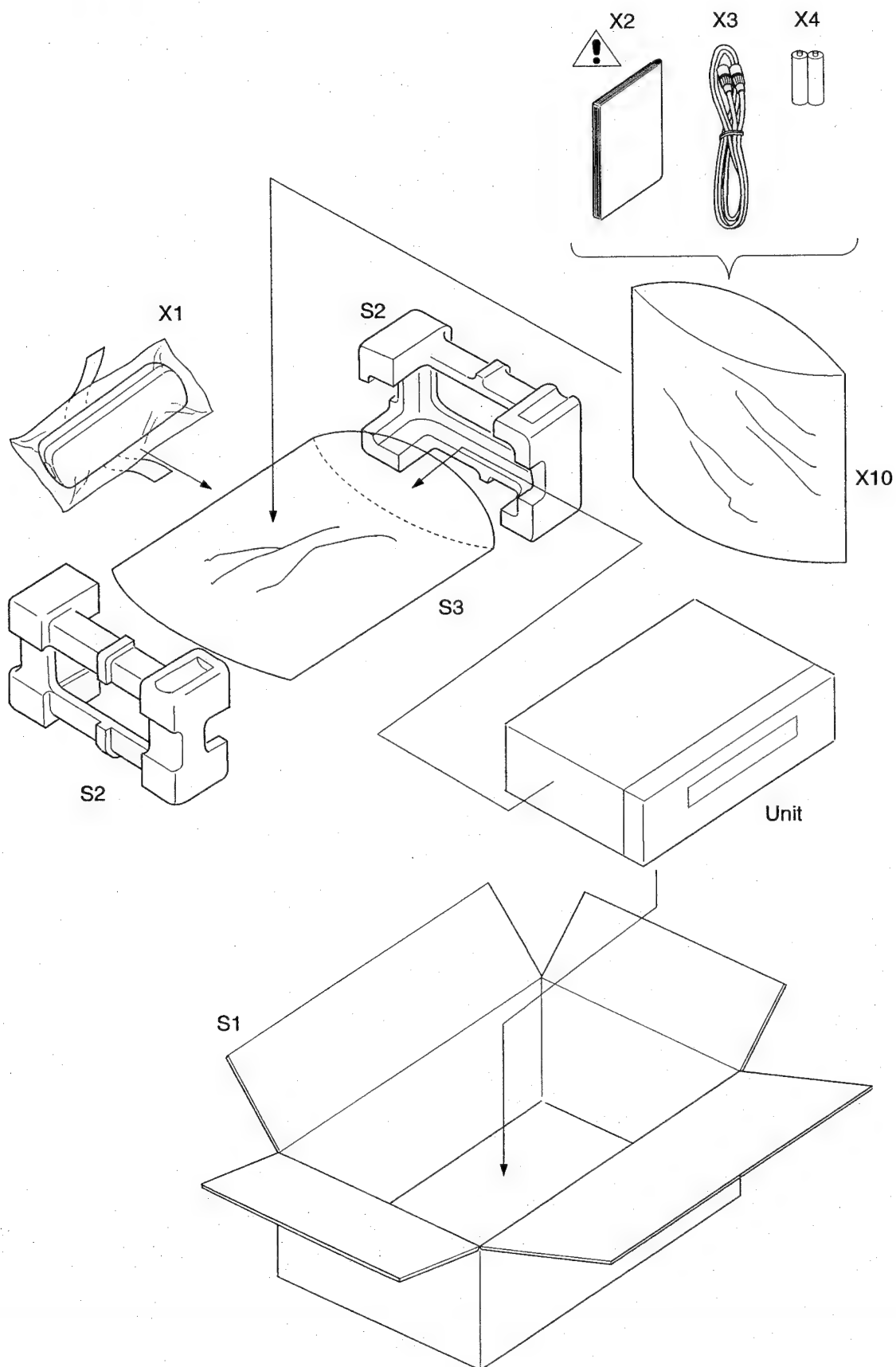




# Cabinet

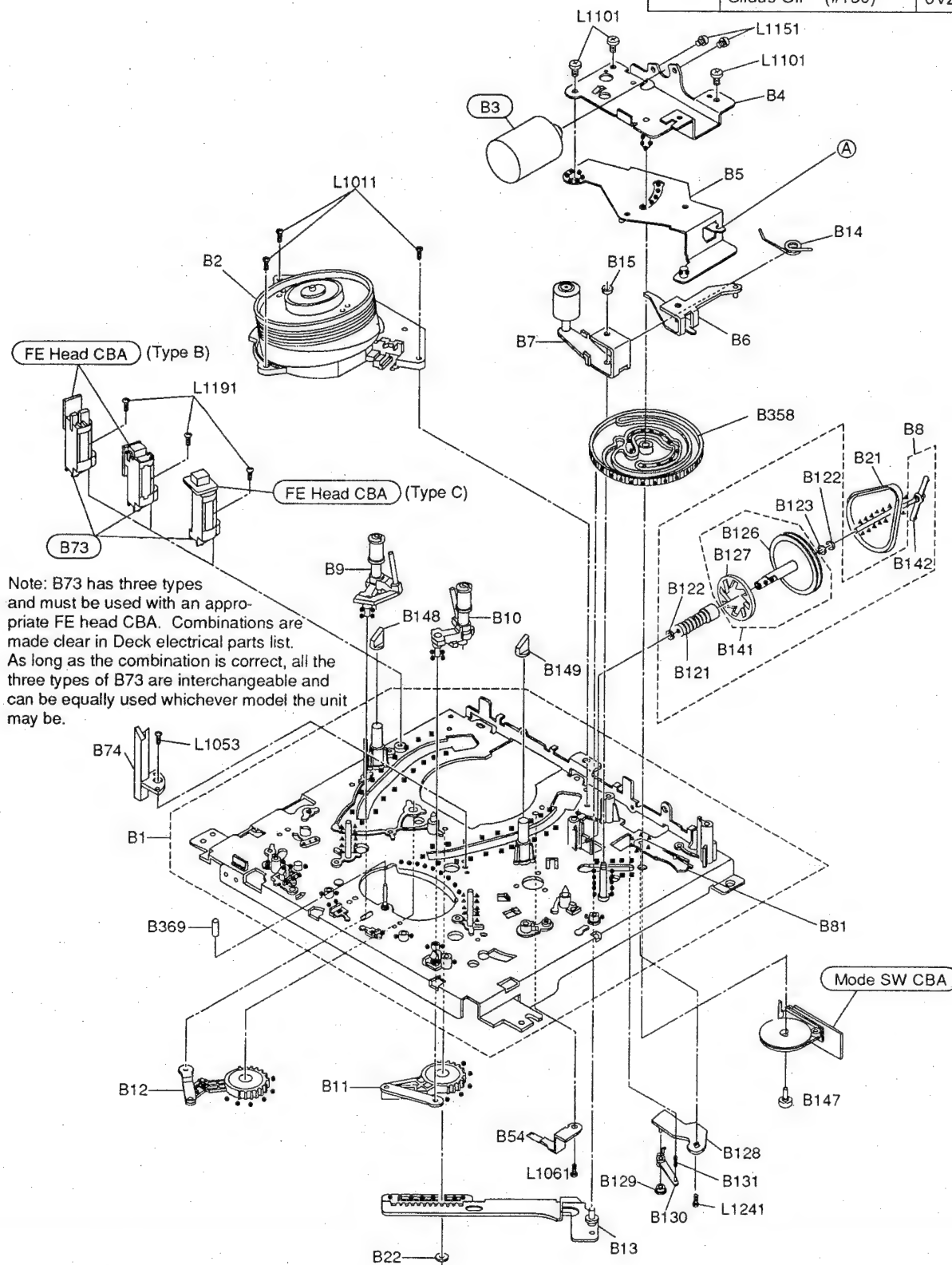


## Packing



# Deck Mechanism View 1

Mark	Description	Part No.
*****	Sankoh! (FG-84M)	0VZZ00062
*****	Three Bond (TB-1901)	0VZZ00063
*****	Floil (G-374G)	0VZZ00109
*****	Slidus Oil (#150)	0VZZ00065



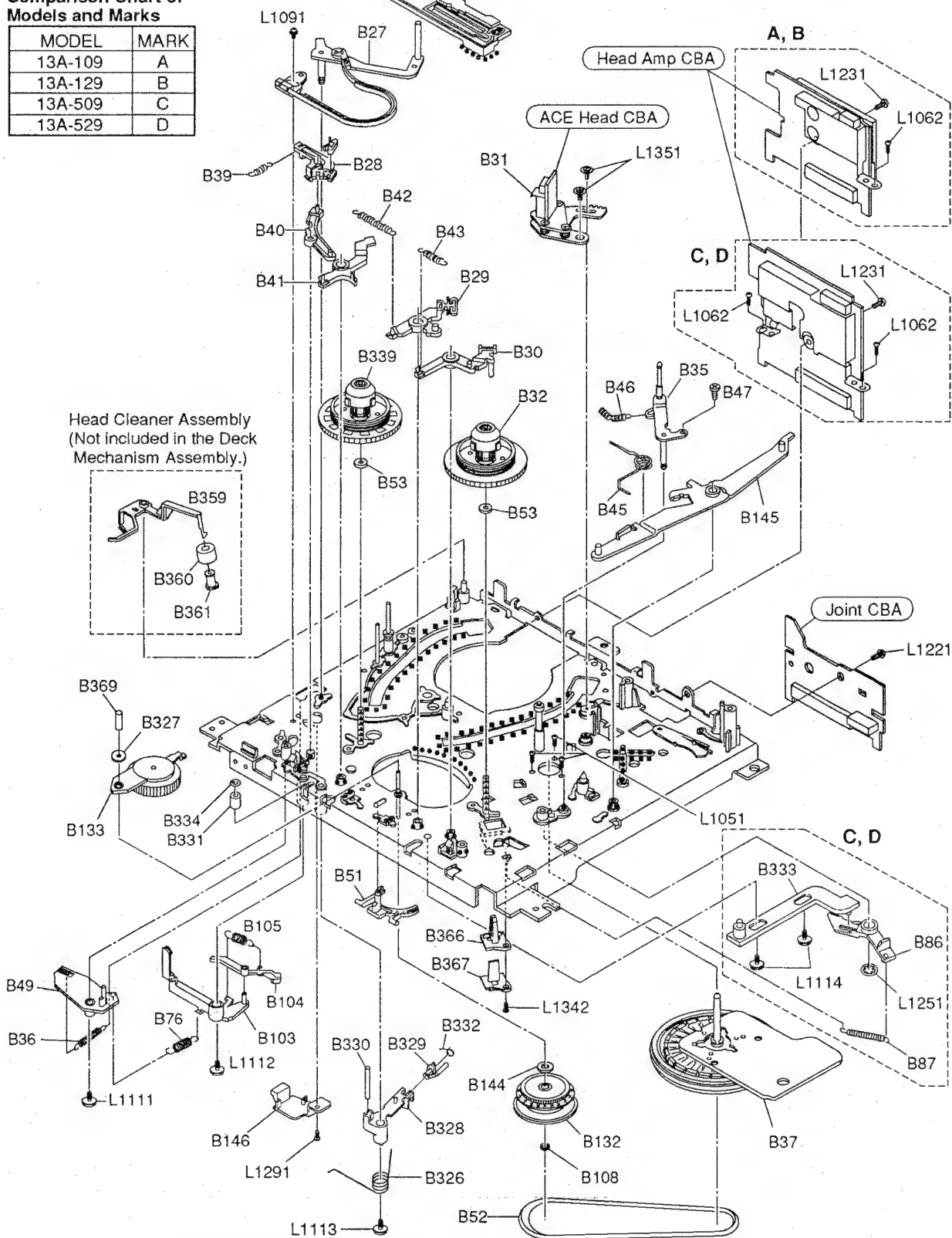
See the Deck Electrical Parts List.

# Deck Mechanism View 2

Comparison Chart of  
Models and Marks

MODEL	MARK
13A-109	A
13A-129	B
13A-509	C
13A-529	D

Mark	Description	Part No.
*****	Sankohl (FG-84M)	0VZZ00062
*****	Three Bond (TB-1901)	0VZZ00063
*****	Floil (G-374G)	0VZZ00109
*****	Slidus Oil (#150)	0VZZ00065

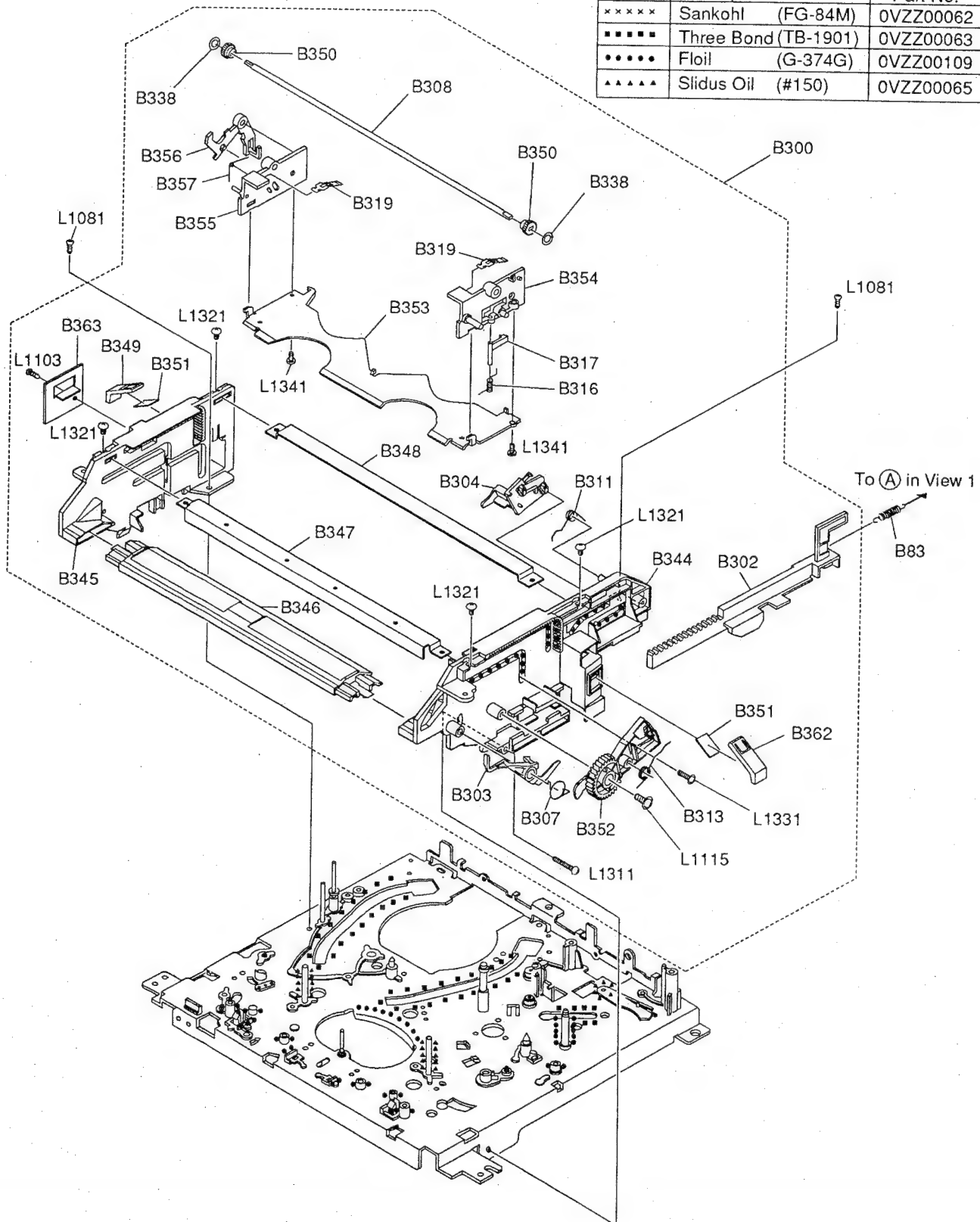


See the Deck Electrical Parts List.




# Deck Mechanism View 3

Mark	Description	Part No.
*****	Sankohl (FG-84M)	0VZZ00062
*****	Three Bond (TB-1901)	0VZZ00063
*****	Floil (G-374G)	0VZZ00109
*****	Slidus Oil (#150)	0VZZ00065











# MECHANICAL PARTS LIST


**PRODUCT SAFETY NOTE:** Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

**Comparison Chart of Models and Marks**

MODEL	MARK
13A-109	A
13A-129	B
13A-509	C
13A-529	D

Ref. No.	Mark	Description	Part No.
A1X	A,B	FRONT ASSEMBLY	OVM201941
A1X	C,D	FRONT ASSEMBLY	OVM201960
A15		CASE, TOP	OVM100621
A16		PANEL, BOTTOM	OVM201919
A18 	A	LABEL, RATING	OVM407361
A18 	B	LABEL, RATING	OVM407362
A18 	C	LABEL, RATING	OVM407425
A18 	D	LABEL, RATING	OVM407646
1B1	A,B	DECK ASSEMBLY	N5106FK
1B1	C,D	DECK ASSEMBLY	N5147FK
2B1		CHASSIS	OVM000090
2B14		FIBER, TOP CASE	OVM406787
2L021		SCREW, P-TIGHT 3X10 WASHER HEAD+	GCMP3100
2L031		SCREW, P-TIGHT 3X10 BIND HEAD	GBMP3100
2L061		SCREW, P-TIGHT 4X12 BIND HEAD+	GBKP4120
<b>PACKING</b>			
S1	A	GIFT BOX CARTON	OVM407364
S1	B	GIFT BOX CARTON	OVM407363
S1	C	GIFT BOX CARTON	OVM407422
S1	D	GIFT BOX CARTON	OVM407649
S2		STYROFOAM(U13 PAL)	OVM201926
S3		ACCESSORY BAG 470X560X0.05T	Z547560
<b>ACCESSORY KIT</b>			
X1	A,B	REMOTE CONTROL UNIT 364/CRC001/4H/P2/VPS	UREMT34SR015
X1	C,D	REMOTE CONTROL UNIT 364/CRC001/4H/P2/VPS	N9140EN
X2 	A	OWNER'S MANUAL	OVMN01773
X2 	B	OWNER'S MANUAL	OVMN01774
X2 	C	OWNER'S MANUAL	OVMN01792
X2 	D	OWNER'S MANUAL	OVMN01848
X3		RF CORD PAL 1.2M	WPZ0122LG001
X4		DRY BATTERY UM-3(M) 2PCS PACK or	1790849
		DRY BATTERY UM3/RS6 2PCS PACK or	579W099
		DRY BATTERY R6P(AR) 2PX	XB0M451HU002
X10		ACCESSORY BAG	OVM404632

# ELECTRICAL PARTS LIST

**PRODUCT SAFETY NOTE:** Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

**NOTE:** Parts that not assigned part numbers (-----) are not available.

Tolerance of Capacitors and Resistors are noted with the following symbols.

C.....±0.25%	D.....±0.5%	F.....±1%
G.....±2%	J.....±5%	K.....±10%
M.....±20%	N.....±30%	Z.....+80/-20%




## Comparison Chart of Models and Marks

MODEL	MARK
13A-109	A
13A-129	B
13A-509	C
13A-529	D

## MCV CBA

Ref. No.	Mark	Description	Part No.
	A,B	MCV CBA (Main + Function + IFV)	0VSA07628
	C,D	MCV CBA (Main + Function + IFV + CSV) Consists of the following: Main CBA (MCV-A) Function CBA (MCV-B)	0VSA07786
	A,B	IF CBA (IFV)	0VSA07729
	C,D	IF CBA (IFV)	0VSA07788
	C,D	CSV CBA	0VSA07882

## Main CBA (MCV-A)

Ref. No.	Mark	Description	Part No.
		Main CBA (MCV-A) Consists of the following:	
		<b>CAPACITORS</b>	
C 001 		METALLIZED FILM CAP. 0.047µF/250V K or	CT2E473NC011
		METALLIZED FILM CAP. 0.047µF/250V M or	CT2E473MS001
		METALLIZED FILM CAP. 0.047µF/250V M or	CT2E473UN009
		METALLIZED FILM CAP. 0.047µF/275V K or	CT2E473DT001
C 002 		METALLIZED FILM CAP. 0.047µF/250V K or	CT2E473NC004
		METALLIZED FILM CAP. 0.047µF/250V K or	CT2E473NC011
		METALLIZED FILM CAP. 0.047µF/250V M or	CT2E473MS001
		METALLIZED FILM CAP. 0.047µF/250V M or	CT2E473UN009
		METALLIZED FILM CAP. 0.047µF/275V K or	CT2E473DT001
C 003 		METALLIZED FILM CAP. 0.047µF/250V K	CT2E473NC004
		SAFTY CAP. 2200pF/400V M or	CCN2HMA0E222
		SAFTY CAP. 2200pF/400V M	CCN2HMP0E222
C 004		ELECTROLYTIC CAP. 22µF/400V M or	CA2H220NC010
		ELECTROLYTIC CAP. 22µF/400V M	CA2H220SP027
C 005		CERAMIC CAP. 0.01µF/500V or	CA2J103TU001
		CERAMIC CAP. B K 0.01µF/500V or	CCD2JKD0B103
		CERAMIC CAP. B K 0.01µF/500V	CCD2JKP0B103
C 006		CERAMIC CAP. SL J 120pF/1KV or	CA3A121MR506

Ref. No.	Mark	Description	Part No.
C 007		CERAMIC CAP. SL K 120pF/1KV	CCD3AKPSL121
		SEMICONDUCTOR CAP. SR K	CDA1EKS0X393
		0.039µF/25V or	
		SEMICONDUCTOR CAP. SR K	12Y2393S
		0.039µF/25V	
C 008		CERAMIC CAP.(AX) X K 3300pF/16V or	CDA1CKT0X332
		CERAMIC CAP. X K 0.0033µF/16V	3X4C332T
C 009		CERAMIC CAP.(AX) X K 4700pF/16V or	CDA1CKT0X472
		CERAMIC CAP. X K 0.0047µF/16V	3X4C472T
C 010		SEMICONDUCTOR CAP. SR K	CDA1EKS0X223
		0.022µF/25V or	
		SEMICONDUCTOR CAP. SR K	12Y2223S
		0.022µF/25V	
C 011		ELECTROLYTIC CAP. 4.7µF/50V M	CE1JMASDL4R7
C 012		ELECTROLYTIC CAP. 470µF/16V M	CE1CMASDL471
C 013		ELECTROLYTIC CAP. 22µF/50V M	CE1JMASDL220
C 014		ELECTROLYTIC CAP. 330µF/16V M	CE1CMASDL331
C 015		ELECTROLYTIC CAP. 330µF/16V M	CE1CMASDL331
C 016		ELECTROLYTIC CAP. 1000µF/6.3V M	CE0KMASDL102
C 017		ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C 018		CERAMIC CAP. F Z 0.01µF/50V	CCD1JZS0F103
C 019		SEMICONDUCTOR CAP. SR K	CDA1EKS0X223
		0.022µF/25V or	
		SEMICONDUCTOR CAP. SR K	12Y2223S
		0.022µF/25V	
C 021		CERAMIC CAP.(AX) B J 150pF/50V or	CCA1JJT0B151
		CERAMIC CAP.(AX) B K 150pF/50V or	CCA1JKT0B151
		CERAMIC CAP. B J 150pF/50V or	3B41151T
		CERAMIC CAP. B K 150pF/50V	3B42151T
C 022		*MYLAR CAP. 0.0012µF/100V J or	CMA2AJS00122
		MYLAR CAP. 0.0012µF/100V J	1255122S
C 051		ELECTROLYTIC CAP. 0.47µF/50V M H7 or	CE1JMASSLR47
		ELECTROLYTIC CAP. 0.47µF/50V M H7	526W474S
C 053		CERAMIC CAP.(AX) B J 470pF/50V or	CCA1JJT0B471
		CERAMIC CAP.(AX) B K 470pF/50V or	CCA1JKT0B471
		CERAMIC CAP. B J 470pF/50V or	3B41471T
		CERAMIC CAP. B K 470pF/50V	3B42471T
C 054		ELECTRIC DOUBLE LAYER CAP.	CA0J223NE003
		0.022F/5.5V Z	
C 055		ELECTROLYTIC CAP. 47µF/6.3V M	CE0KMASDL470
C 056		ELECTROLYTIC CAP. 470µF/6.3V M	CE0KMASDL471
C 060		CERAMIC CAP.(AX) B J 150pF/50V or	CCA1JJT0B151
		CERAMIC CAP.(AX) B K 150pF/50V or	CCA1JKT0B151
		CERAMIC CAP. B J 150pF/50V or	3B41151T
		CERAMIC CAP. B K 150pF/50V	3B42151T
C 061		CERAMIC CAP.(AX) F Z 0.022µF/25V or	CDA1EZT0F223
		CERAMIC CAP. F Z 0.022µF/25V	1220843T
C 062		CERAMIC CAP.(AX) Y M 0.01µF/16V	CDA1CMT0Y103
C 301		ELECTROLYTIC CAP. 0.1µF/50V M H7 or	CE1JMASSLR01
		ELECTROLYTIC CAP. 0.1µF/50V M H7	526W104S
C 302		CERAMIC CAP.(AX) SL J 39pF/50V or	CCA1JUTSL390
		CERAMIC CAP. SL J 39pF/50V	3S41390T

\* Mylar is a registered trademark of E. I. DuPont de Nemours and Company.

Ref. No.	Mark	Description	Part No.
C 303		ELECTROLYTIC CAP. 0.1μF/50V M H7 or	CE1JMASSL0R1
		ELECTROLYTIC CAP. 0.1μF/50V M H7	526W104S
C 304		CERAMIC CAP.(AX) B J 150pF/50V or	CCA1JJT0B151
		CERAMIC CAP.(AX) B K 150pF/50V or	CCA1JKT0B151
		CERAMIC CAP. B J 150pF/50V or	3B41151T
		CERAMIC CAP. B K 150pF/50V	3B42151T
C 305	A,B	CERAMIC CAP.(AX) SL J 56pF/50V or	CCA1JJTSL560
		CERAMIC CAP. SL J 56pF/50V	3S41560T
C 305	C,D	CERAMIC CAP.(AX) SL J 47pF/50V or	CCA1JJTSL470
		CERAMIC CAP. SL J 47pF/50V	3S41470T
C 306	A,B	CERAMIC CAP.(AX) F Z 0.022μF/25V or	CDA1EZT0F223
		CERAMIC CAP. F Z 0.022μF/25V	1220843T
C 306	C,D	CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 307		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 308		CERAMIC CAP.(AX) SL J 39pF/50V or	CCA1JJTSL390
		CERAMIC CAP. SL J 39pF/50V	3S41390T
C 309		CERAMIC CAP.(AX) SL J 33pF/50V or	CCA1JJTSL330
		CERAMIC CAP. SL J 33pF/50V	3S41330T
C 310		CERAMIC CAP.(AX) SL J 33pF/50V or	CCA1JJTSL330
		CERAMIC CAP. SL J 33pF/50V	3S41330T
C 311		CERAMIC CAP.(AX) SL J 27pF/50V or	CCA1JJTSL270
		CERAMIC CAP. SL J 27pF/50V	3S41270T
C 312		CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 313		CERAMIC CAP.(AX) SL J 39pF/50V or	CCA1JJTSL390
		CERAMIC CAP. SL J 39pF/50V	3S41390T
C 317		CERAMIC CAP.(AX) B J 220pF/50V or	CCA1JJT0B221
		CERAMIC CAP.(AX) B K 220pF/50V or	CCA1JKT0B221
		CERAMIC CAP. B J 220pF/50V or	3B41221T
		CERAMIC CAP. B K 220pF/50V	3B42221T
C 318		CERAMIC CAP.(AX) B J 100pF/50V or	CCA1JJT0B101
		CERAMIC CAP.(AX) B K 100pF/50V or	CCA1JKT0B101
		CERAMIC CAP. B J 100pF/50V or	3B41101T
		CERAMIC CAP. B K 100pF/50V	3B42101T
C 319		CERAMIC CAP.(AX) SL J 39pF/50V or	CCA1JJTSL390
		CERAMIC CAP. SL J 39pF/50V	3S41390T
C 320		CERAMIC CAP.(AX) B J 270pF/50V or	CCA1JJT0B271
		CERAMIC CAP.(AX) B K 270pF/50V or	CCA1JKT0B271
		CERAMIC CAP. B J 270pF/50V or	3B41271T
		CERAMIC CAP. B K 270pF/50V	3B42271T
C 322		ELECTROLYTIC CAP. 470μF/6.3V M	CE0KMASDL471
C 323		ELECTROLYTIC CAP. 100μF/16V M	CE1CMASDL101
C 325		CERAMIC CAP.(AX) B J 180pF/50V or	CCA1JJT0B181
		CERAMIC CAP.(AX) B K 180pF/50V or	CCA1JKT0B181
		CERAMIC CAP. B J 180pF/50V or	3B41181T
		CERAMIC CAP. B K 180pF/50V	3B42181T
C 326		CERAMIC CAP.(AX) SL J 33pF/50V or	CCA1JJTSL330
		CERAMIC CAP. SL J 33pF/50V	3S41330T
C 327		CERAMIC CAP.(AX) SL J 47pF/50V or	CCA1JJTSL470
		CERAMIC CAP. SL J 47pF/50V	3S41470T
C 328		CERAMIC CAP.(AX) SL J 68pF/50V or	CCA1JJTSL680
		CERAMIC CAP. SL J 68pF/50V	3S41680T
C 329		CERAMIC CAP.(AX) SL J 22pF/50V or	CCA1JJTSL220
		CERAMIC CAP. SL J 22pF/50V	3S41220T
C 330		ELECTROLYTIC CAP. 1μF/50V M H7 or	CE1JMASSL010
		ELECTROLYTIC CAP. 1μF/50V M H7	526W105S
C 331		CERAMIC CAP.(AX) B J 390pF/50V or	CCA1JJT0B391
		CERAMIC CAP.(AX) B K 390pF/50V or	CCA1JKT0B391
		CERAMIC CAP. B J 390pF/50V or	3B41391T
		CERAMIC CAP. B K 390pF/50V	3B42391T
C 332		CERAMIC CAP.(AX) SL J 18pF/50V or	CCA1JJTSL180
		CERAMIC CAP. SL J 18pF/50V	3S41180T
C 333		CERAMIC CAP.(AX) B J 100pF/50V or	CCA1JJT0B101
		CERAMIC CAP.(AX) B K 100pF/50V or	CCA1JKT0B101
		CERAMIC CAP. B J 100pF/50V or	3B41101T
		CERAMIC CAP. B K 100pF/50V	3B42101T
C 334		ELECTROLYTIC CAP. 10μF/16V M	CE1CMASDL100

Ref. No.	Mark	Description	Part No.
C 335		ELECTROLYTIC CAP. 10μF/16V M H7 or	CE1CMASDL100
		ELECTROLYTIC CAP. 10μF/16V M H7	526T106S
C 336		CERAMIC CAP.(AX) SL J 39pF/50V or	CCA1JJTSL390
		CERAMIC CAP. SL J 39pF/50V	3S41390T
C 337		CERAMIC CAP.(AX) F Z 0.047μF/50V	CCA1JZT0F473
C 338		CERAMIC CAP.(AX) F Z 0.022μF/25V or	CDA1EZT0F223
		CERAMIC CAP. F Z 0.022μF/25V	1220843T
C 339		CERAMIC CAP. F Z 0.01μF/50V	CCD1JZS0F103
C 340		ELECTROLYTIC CAP. 1μF/50V M H7 or	CE1JMASSL010
		ELECTROLYTIC CAP. 1μF/50V M H7	526W105S
C 344		ELECTROLYTIC CAP. 1μF/50V M H7 or	CE1JMASSL010
		ELECTROLYTIC CAP. 1μF/50V M H7	526W105S
C 345		SEMICONDUCTOR CAP. SR K	CDA1EKS0X103
		0.01μF/25V or	
		SEMICONDUCTOR CAP. SR K	12Y2103S
		0.01μF/25V	
C 346		CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 347		ELECTROLYTIC CAP. 10μF/16V M H7 or	CE1CMASDL100
		ELECTROLYTIC CAP. 10μF/16V M H7	526T106S
C 348		ELECTROLYTIC CAP. 4.7μF/50V M H7 or	CE1JMASSL4R7
		ELECTROLYTIC CAP. 4.7μF/50V M H7	526W475S
C 349		ELECTROLYTIC CAP. 220μF/6.3V M H7 or	CE0KMASSL221
		ELECTROLYTIC CAP. 220μF/6.3V M H7	526R227S
C 350		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 351		ELECTROLYTIC CAP. 4.7μF/25V M H7 or	CE1EMASDL4R7
		ELECTROLYTIC CAP. 4.7μF/25V M H7	526U475S
C 352		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 353		CERAMIC CAP.(AX) F Z 0.022μF/25V or	CDA1EZT0F223
		CERAMIC CAP. F Z 0.022μF/25V	1220843T
C 354		ELECTROLYTIC CAP. 4.7μF/25V M H7 or	CE1EMASDL4R7
		ELECTROLYTIC CAP. 4.7μF/25V M H7	526U475S
C 355		ELECTROLYTIC CAP. 1μF/50V M H7 or	CE1JMASSL010
		ELECTROLYTIC CAP. 1μF/50V M H7	526W105S
C 360	C,D	CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 361		ELECTROLYTIC CAP. 22μF/10V M	CE1AMASDL220
C 362	A,B	CERAMIC CAP.(AX) F Z 0.047μF/50V	CCA1JZT0F473
C 362	C,D	CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 363	A,B	CERAMIC CAP.(AX) X K 2200pF/16V or	CDA1CKT0X222
		CERAMIC CAP. X K 0.0022μF/16V	3X4C222T
C 364	A,B	PCB JUMPER D0.6-P5.0	JW5.0T
C 364	C,D	FARRITE BEAD CORE	LLBF00ZTE003
		HF55BTS3.5X4.5B	
C 365		CERAMIC CAP.(AX) SL J 27pF/50V or	CCA1JJTSL270
		CERAMIC CAP. SL J 27pF/50V	3S41270T
C 366		CERAMIC CAP.(AX) SL J 27pF/50V or	CCA1JJTSL270
		CERAMIC CAP. SL J 27pF/50V	3S41270T
C 367		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 368		ELECTROLYTIC CAP. 1μF/50V M	CE1JMASSL010
C 370		SEMICONDUCTOR CAP. SR K	CDA1EKS0X103
		0.01μF/25V or	
		SEMICONDUCTOR CAP. SR K	12Y2103S
		0.01μF/25V	
C 371		CERAMIC CAP.(AX) SL J 12pF/50V or	CCA1JJTSL120
		CERAMIC CAP. SL J 12pF/50V	3S41120T
C 372		CERAMIC CAP.(AX) SL J 15pF/50V or	CCA1JJTSL150
		CERAMIC CAP. SL J 15pF/50V	3S41150T
C 373		CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 374	A,B	ELECTROLYTIC CAP. 1μF/50V M H7 or	CE1JMASSL010
		ELECTROLYTIC CAP. 1μF/50V M H7	526W105S
C 380		CERAMIC CAP.(AX) B J 1000pF/50V or	CDA1JJT0B102
		CERAMIC CAP.(AX) B K 1000pF/50V or	CDA1JKT0B102
		CERAMIC CAP. B J 0.001μF/50V or	3B41102T
		CERAMIC CAP. B K 0.001μF/50V	3B42102T
C 388	A,B	CERAMIC CAP.(AX) SL J 56pF/50V or	CCA1JJTSL560
		CERAMIC CAP. SL J 56pF/50V	3S41560T
C 390	C,D	CERAMIC CAP.(AX) SL J 68pF/50V or	CCA1JJTSL680






Ref. No.	Mark	Description	Part No.
C 391	C,D	CERAMIC CAP. SL J 68pF/50V	3S41680T
		ELECTROLYTIC CAP. 1μF/50V M H7 or	CE1JMASSL010
		ELECTROLYTIC CAP. 1μF/50V M H7	526W105S
C 401		MYLAR CAP. 0.022μF/100V J or	CMA2AJ500223
		MYLAR CAP. 0.022μF/100V J	1255223S
C 402		ELECTROLYTIC CAP. 47μF/16V M H7 or	CE1CMASSL470
		ELECTROLYTIC CAP. 47μF/16V M H7	526T476S
C 403		SEMICONDUCTOR CAP. SR K	CDA1EKS0X103
		0.01μF/25V or	
		SEMICONDUCTOR CAP. SR K	12Y2103S
		0.01μF/25V	
C 404		SEMICONDUCTOR CAP. SR K	CDA1EKS0X103
		0.01μF/25V or	
		SEMICONDUCTOR CAP. SR K	12Y2103S
		0.01μF/25V	
C 405		ELECTROLYTIC CAP. 4.7μF/25V M H7 or	CE1EMASSL4R7
		ELECTROLYTIC CAP. 4.7μF/25V M H7	526U475S
C 406		ELECTROLYTIC CAP. 22μF/16V M H7 or	CE1CMASSL220
		ELECTROLYTIC CAP. 22μF/16V M H7	526T226S
C 407		CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 408		CERAMIC CAP.(AX) B J 220pF/50V or	CCA1JJT0B221
		CERAMIC CAP.(AX) B K 220pF/50V or	CCA1JKT0B221
		CERAMIC CAP. B J 220pF/50V or	3B41221T
		CERAMIC CAP. B K 220pF/50V	3B42221T
C 409		ELECTROLYTIC CAP. 0.1μF/50V M	CE1JMASDL0R1
C 410		CERAMIC CAP.(AX) X K 2700pF/16V or	CDA1CKT0X272
		CERAMIC CAP. X K 0.0027μF/16V	3X4C272T
C 411		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 412		ELECTROLYTIC CAP. 3.3μF/50V M	CE1JMASDL3R3
C 413		CERAMIC CAP.(AX) X K 6800pF/16V or	CDA1CKT0X682
		CERAMIC CAP. X K 0.0068μF/16V	3X4C682T
C 414		ELECTROLYTIC CAP. 4.7μF/25V M H7 or	CE1EMASSL4R7
		ELECTROLYTIC CAP. 4.7μF/25V M H7	526U475S
C 415		ELECTROLYTIC CAP. 0.1μF/50V M H7 or	CE1JMASSL0R1
		ELECTROLYTIC CAP. 0.1μF/50V M H7	526W104S
C 416		CERAMIC CAP.(AX) X K 1800pF/16V or	CDA1CKT0X182
		CERAMIC CAP. X K 0.0018μF/16V	3X4C182T
C 417		CERAMIC CAP.(AX) X K 1200pF/16V or	CDA1CKT0X122
		CERAMIC CAP. X K 0.0012μF/16V	3X4C122T
C 418		ELECTROLYTIC CAP. 1μF/50V M H7 or	CE1JMASSL010
		ELECTROLYTIC CAP. 1μF/50V M H7	526W105S
C 419		ELECTROLYTIC CAP. 0.1μF/50V M	CE1JMASDL0R1
C 420		ELECTROLYTIC CAP. 10μF/16V M H7 or	CE1CMASSL100
		ELECTROLYTIC CAP. 10μF/16V M H7	526T106S
C 421		ELECTROLYTIC CAP. 1μF/50V M H7 or	CE1JMASSL010
		ELECTROLYTIC CAP. 1μF/50V M H7	526W105S
C 501		CERAMIC CAP.(AX) B J 1000pF/50V or	CDA1JJT0B102
		CERAMIC CAP.(AX) B K 1000pF/50V or	CDA1JKT0B102
		CERAMIC CAP. B J 0.001μF/50V or	3B41102T
		CERAMIC CAP. B K 0.001μF/50V	3B42102T
C 502		CERAMIC CAP.(AX) B J 1000pF/50V or	CDA1JJT0B102
		CERAMIC CAP.(AX) B K 1000pF/50V or	CDA1JKT0B102
		CERAMIC CAP. B J 0.001μF/50V or	3B41102T
		CERAMIC CAP. B K 0.001μF/50V	3B42102T
C 503		CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 504		CERAMIC CAP.(AX) B J 1000pF/50V or	CDA1JJT0B102
		CERAMIC CAP.(AX) B K 1000pF/50V or	CDA1JKT0B102
		CERAMIC CAP. B J 0.001μF/50V or	3B41102T
		CERAMIC CAP. B K 0.001μF/50V	3B42102T
C 506		ELECTROLYTIC CAP. 22μF/16V M H7 or	CE1CMASSL220
		ELECTROLYTIC CAP. 22μF/16V M H7	526T226S
C 508		CERAMIC CAP.(AX) B J 1000pF/50V or	CDA1JJT0B102
		CERAMIC CAP.(AX) B K 1000pF/50V or	CDA1JKT0B102
		CERAMIC CAP. B J 0.001μF/50V or	3B41102T
		CERAMIC CAP. B K 0.001μF/50V	3B42102T
C 509		CERAMIC CAP.(AX) X K 3300pF/16V or	CDA1CKT0X332
		CERAMIC CAP. X K 0.0033μF/16V	3X4C332T

Ref. No.	Mark	Description	Part No.
C 510		ELECTROLYTIC CAP. 47μF/6.3V M H7 or	CE0KMASSL470
		ELECTROLYTIC CAP. 47μF/6.3V M H7	526R476S
C 511		CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 512		CERAMIC CAP.(AX) X K 3300pF/16V or	CDA1CKT0X332
		CERAMIC CAP. X K 0.0033μF/16V	3X4C332T
C 513		CERAMIC CAP.(AX) X K 6800pF/16V or	CDA1CKT0X682
		CERAMIC CAP. X K 0.0068μF/16V	3X4C682T
C 514		CERAMIC CAP.(AX) F Z 0.047μF/50V	CCA1JZT0F473
C 515		ELECTROLYTIC CAP. 47μF/6.3V M H7 or	CE0KMASSL470
		ELECTROLYTIC CAP. 47μF/6.3V M H7	526R476S
C 516		CERAMIC CAP.(AX) B J 330pF/50V or	CCA1JJT0B331
		CERAMIC CAP.(AX) B K 330pF/50V or	CCA1JKT0B331
		CERAMIC CAP. B J 330pF/50V or	3B41331T
		CERAMIC CAP. B K 330pF/50V	3B42331T
C 517	C,D	CERAMIC CAP.(AX) F Z 0.022μF/25V or	CDA1EZT0F223
		CERAMIC CAP. F Z 0.022μF/25V	1220843T
C 518	A,B	CERAMIC CAP. F Z 0.01μF/50V	CCD1JZS0F103
C 518	C,D	CERAMIC CAP.(AX) B J 1000pF/50V or	CDA1JJT0B102
		CERAMIC CAP.(AX) B K 1000pF/50V or	CDA1JKT0B102
		CERAMIC CAP. B J 0.001μF/50V or	3B41102T
		CERAMIC CAP. B K 0.001μF/50V	3B42102T
C 519		ELECTROLYTIC CAP. 10μF/16V M LL H7 or	CA1C100SP018
		ELECTROLYTIC CAP. 10μF/16V M LL H7	CE1CMASHL100
C 520		CERAMIC CAP.(AX) B J 220pF/50V or	CCA1JJT0B221
		CERAMIC CAP.(AX) B K 220pF/50V or	CCA1JKT0B221
		CERAMIC CAP. B J 220pF/50V or	3B41221T
		CERAMIC CAP. B K 220pF/50V	3B42221T
C 521		ELECTROLYTIC CAP. 2.2μF/50V M	CE1JMASDL2R2
C 522		ELECTROLYTIC CAP. 10μF/16V M	CE1CMASDL100
C 523		CERAMIC CAP.(AX) SL J 27pF/50V or	CCA1JJSLSL270
		CERAMIC CAP. SL J 27pF/50V	3S41270T
C 524		CERAMIC CAP.(AX) SL J 27pF/50V or	CCA1JJSLSL270
		CERAMIC CAP. SL J 27pF/50V	3S41270T
C 525		ELECTROLYTIC CAP. 100μF/6.3V M H7 or	CE0KMASSL101
		ELECTROLYTIC CAP. 100μF/6.3V M H7	526R107S
C 526		CERAMIC CAP.(AX) F Z 0.022μF/25V or	CDA1EZT0F223
		CERAMIC CAP. F Z 0.022μF/25V	1220843T
C 527		CERAMIC CAP.(AX) B J 1000pF/50V or	CDA1JJT0B102
		CERAMIC CAP.(AX) B K 1000pF/50V or	CDA1JKT0B102
		CERAMIC CAP. B J 0.001μF/50V or	3B41102T
		CERAMIC CAP. B K 0.001μF/50V	3B42102T
C 528		ELECTROLYTIC CAP. 330μF/6.3V M H7 or	CE0KMASSL331
		ELECTROLYTIC CAP. 330μF/6.3V M H7	526R337S
C 529		CERAMIC CAP.(AX) F Z 0.047μF/50V	CCA1JZT0F473
C 530		CERAMIC CAP. F Z 0.01μF/50V (C530 Used only if IC504B: LB1641)	CCD1JZS0F103
C 531		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 532		ELECTROLYTIC CAP. 10μF/16V M	CE1CMASDL100
C 533		CERAMIC CAP.(AX) X K 1500pF/16V or	CDA1CKT0X152
		CERAMIC CAP. X K 0.0015μF/16V	3X4C152T
C 534	A,B	CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 535	C,D	CERAMIC CAP.(AX) SL J 10pF/50V or	CCA1JJSLSL100
		CERAMIC CAP. SL J 10pF/50V	3S41100T
C 536	A,B	CERAMIC CAP.(AX) SL J 10pF/50V or	CCA1JJSLSL100
		CERAMIC CAP. SL J 10pF/50V	3S41100T
C 536	C,D	PCB JUMPER D0.6-P5.0	JW5.0T
C 537		ELECTROLYTIC CAP. 33μF/6.3V M	CE0KMASDL330
C 538		CERAMIC CAP.(AX) F Z 0.022μF/25V or	CDA1EZT0F223
		CERAMIC CAP. F Z 0.022μF/25V	1220843T
C 539		ELECTROLYTIC CAP. 22μF/10V M	CE1AMASDL220
C 540		ELECTROLYTIC CAP. 1μF/50V M	CE1JMASDL010
C 541		CERAMIC CAP.(AX) Y M 0.01μF/16V	CDA1CMT0Y103
C 545	C,D	CERAMIC CAP.(AX) SL J 10pF/50V or	CCA1JJSLSL100
		CERAMIC CAP. SL J 10pF/50V	3S41100T

Ref. No.	Mark	Description	Part No.
C 547		CERAMIC CAP.(AX) X K 3900pF/16V or CERAMIC CAP. X K 0.0039μF/16V	CDA1CKT0X392 3X4C392T
C 548		CERAMIC CAP.(AX) X K 3900pF/16V or CERAMIC CAP. X K 0.0039μF/16V	CDA1CKT0X392 3X4C392T
C 549		CERAMIC CAP.(AX) F Z 0.047μF/50V	CCA1JZT0F473
C 671		SEMICONDUCTOR CAP. F Z 0.1μF/25V or SEMICONDUCTOR CAP. F Z 0.1μF/25V	CDA1EZO0F104 1220520S
C 701		CERAMIC CAP.(AX) F Z 0.047μF/50V	CCA1JZT0F473
C 702		CERAMIC CAP.(AX) F Z 0.047μF/50V	CCA1JZT0F473
C 703		ELECTROLYTIC CAP. 10μF/16V M	CE1CMASDL100
C 704		CERAMIC CAP.(AX) SL J 56pF/50V or CERAMIC CAP. SL J 56pF/50V	CCA1JJTSL560 3S41560T
C 705		ELECTROLYTIC CAP. 47μF/35V M	CE1GMASDL470
C 706		MYLAR CAP. 0.033μF/50V J or MYLAR CAP. 0.033μF/50V J	CMA1JJS00333 2254333S
C 707		MYLAR CAP. 0.033μF/50V J or MYLAR CAP. 0.033μF/50V J	CMA1JJS00333 2254333S
C 708		MYLAR CAP. 0.033μF/50V J or MYLAR CAP. 0.033μF/50V J	CMA1JJS00333 2254333S
C 710		ELECTROLYTIC CAP. 100μF/16V M	CE1CMASDL101
C 711		CERAMIC CAP.(AX) B J 1000pF/50V or CERAMIC CAP.(AX) B K 1000pF/50V or CERAMIC CAP. B J 0.001μF/50V or CERAMIC CAP. B K 0.001μF/50V	CDA1JKT0B102 CDA1JKT0B102 3B41102T 3B42102T
C 712		CERAMIC CAP.(AX) X K 2200pF/16V or CERAMIC CAP. X K 0.0022μF/16V	CDA1CKT0X222 3X4C222T
C 713		CERAMIC CAP.(AX) X K 2200pF/16V or CERAMIC CAP. X K 0.0022μF/16V	CDA1CKT0X222 3X4C222T
C 714		CERAMIC CAP.(AX) X K 2200pF/16V or CERAMIC CAP. X K 0.0022μF/16V	CDA1CKT0X222 3X4C222T
C 716		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 717		ELECTROLYTIC CAP. 4.7μF/25V M	CE1EMASDL4R7
C 718		ELECTROLYTIC CAP. 4.7μF/25V M	CE1EMASDL4R7
C 719		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 720		CERAMIC CAP.(AX) B J 1000pF/50V or CERAMIC CAP.(AX) B K 1000pF/50V or CERAMIC CAP. B J 0.001μF/50V or CERAMIC CAP. B K 0.001μF/50V	CDA1JKT0B102 CDA1JKT0B102 3B41102T 3B42102T
C 721		ELECTROLYTIC CAP. 1μF/50V M	CE1JMASDL010
C 722		ELECTROLYTIC CAP. 470μF/10V M	CE1AMASDL471
C 726		ELECTROLYTIC CAP. 4.7μF/25V M	CE1EMASDL4R7
C 751		ELECTROLYTIC CAP. 10μF/16V M	CE1CMASDL100
C 752		CERAMIC CAP.(AX) X K 3300pF/16V or CERAMIC CAP. X K 0.0033μF/16V	CDA1CKT0X332 3X4C332T
C 753		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 754		CERAMIC CAP.(AX) B J 470pF/50V or CERAMIC CAP.(AX) B K 470pF/50V or CERAMIC CAP. B J 470pF/50V or CERAMIC CAP. B K 470pF/50V	CCA1JJT0B471 CCA1JKT0B471 3B41471T 3B42471T
C 755		CERAMIC CAP.(AX) B J 150pF/50V or CERAMIC CAP.(AX) B K 150pF/50V or CERAMIC CAP. B J 150pF/50V or CERAMIC CAP. B K 150pF/50V	CCA1JJT0B151 CCA1JKT0B151 3B41151T 3B42151T
C 756		CERAMIC CAP. F Z 0.01μF/50V	CCD1JZS0F103
C 758		ELECTROLYTIC CAP. 1μF/50V M	CE1JMASDL010
R 564	C,D	CERAMIC CAP.(AX) B J 100pF/50V or CERAMIC CAP.(AX) B K 100pF/50V or CERAMIC CAP. B J 100pF/50V or CERAMIC CAP. B K 100pF/50V	CCA1JJT0B101 CCA1JKT0B101 3B41101T 3B42101T
<b>CONNECTORS</b>			
CN 301	A,B	STRAIGHT PIN CONNECTOR, 15P	1770635
CN 301	C,D	STRAIGHT PIN CONNECTOR, 17P	1770637
CN 501		STRAIGHT PIN CONNECTOR, 20P	1770640
CN 502		STRAIGHT PIN CONNECTOR, 3P	1770623
CN 503		STRAIGHT PIN HEADER, 2P	1740764

Ref. No.	Mark	Description	Part No.
CN 671		STRAIGHT PIN CONNECTOR, 9P	1770629
<b>DIODES</b>			
D 001		RECTIFIER DIODE 1A5 or RECTIFIER DIODE 1N4005 or RECTIFIER DIODE 1N4005E or RECTIFIER DIODE 1N4005	NDQZ000001A5 ND8Z001N4005 NDQZ01N4005E NDQZ001N4005
D 002		RECTIFIER DIODE 1A5 or RECTIFIER DIODE 1N4005 or RECTIFIER DIODE 1N4005E or RECTIFIER DIODE 1N4005	NDQZ000001A5 ND8Z001N4005 NDQZ01N4005E NDQZ001N4005
D 003		RECTIFIER DIODE 1A5 or RECTIFIER DIODE 1N4005 or RECTIFIER DIODE 1N4005E or RECTIFIER DIODE 1N4005	NDQZ000001A5 ND8Z001N4005 NDQZ01N4005E NDQZ001N4005
D 004		RECTIFIER DIODE 1A5 or RECTIFIER DIODE 1N4005 or RECTIFIER DIODE 1N4005E or RECTIFIER DIODE 1N4005	NDQZ000001A5 ND8Z001N4005 NDQZ01N4005E NDQZ001N4005
D 005		RECTIFIER DIODE EG01C or FAST RECOVERY DIODE AP01C or RECTIFIER DIODE ERA22-10Y2(TYPE I) or FAST RECOVERY DIODE RGP10K	QDPZ000EG01C AAP01C000000 QDQZ0ERA2210 ND8Z00RGP10K
D 006		SWITCHING DIODE 1N4148M or SWITCHING DIODE 1N4148M or SWITCHING DIODE GMB01-BT	NDT201N4148M QDT201N4148M GMB01BT
D 007		SWITCHING DIODE 1N4148M or SWITCHING DIODE 1N4148M or SWITCHING DIODE GMB01-BT	NDT201N4148M QDT201N4148M GMB01BT
D 008		SWITCHING DIODE 1N4148M or SWITCHING DIODE 1N4148M or SWITCHING DIODE GMB01-BT	NDT201N4148M QDT201N4148M GMB01BT
D 009		RECTIFIER DIODE EG01C or FAST RECOVERY DIODE AP01C or RECTIFIER DIODE ERA22-10Y2(TYPE I) or FAST RECOVERY DIODE RGP10K	QDPZ000EG01C AAP01C000000 QDQZ0ERA2210 ND8Z00RGP10K
D 010		RECTIFIER DIODE RU3YX LF-C4 or FAST RECOVERY DIODE EGP20B or FAST RECOVERY DIODE EGP20D	QD7Z000RU3YX NDQB000EGP20 NDQD000EGP20
D 011		SWITCHING DIODE MA188 or SWITCHING DIODE BAV21	QDT2000MA188 NDQZ000BAV21
D 012		SCHOTTKY BARRIER DIODE AK04 or SCHOTTKY BARRIER DIODE ERA81- 004 or SCHOTTKY BARRIER DIODE 11EQS04 or SCHOTTKY BARRIER DIODE SB040	QDQZ000AK04 QDQZERA81004 QD4Z011EQS04 NDQZ000SB040
D 013		SWITCHING DIODE MA178 or SWITCHING DIODE BAV18	QDT2000MA178 NDQZ000BAV18
D 016		ZENER DIODE UZ-6.8BSA	QDTA0UZ6R8BS
D 051		ZENER DIODE UZ-6.2BSB	QDTB0UZ6R2BS
D 052		SWITCHING DIODE 1N4148M or SWITCHING DIODE 1N4148M or SWITCHING DIODE GMB01-BT	NDT201N4148M QDT201N4148M GMB01BT
D 054		SWITCHING DIODE 1N4148M or SWITCHING DIODE 1N4148M or SWITCHING DIODE GMB01-BT	NDT201N4148M QDT201N4148M GMB01BT
D 055		ZENER DIODE UZ-9.1BSC	QDTC0UZ9R1BS
D 057		ZENER DIODE UZ-30BSA	QDTA00UZ30BS
D 058		RECTIFIER DIODE 1A5 or RECTIFIER DIODE 1N4005 or RECTIFIER DIODE 1N4005E or RECTIFIER DIODE 1N4005	NDQZ000001A5 ND8Z001N4005 NDQZ01N4005E NDQZ001N4005
D 059		ZENER DIODE UZ-9.1BSC	QDTC0UZ9R1BS
D 301	C,D	SWITCHING DIODE 1N4148M or SWITCHING DIODE 1N4148M or	NDT201N4148M QDT201N4148M

Ref. No.	Mark	Description	Part No.
D 303	A,B	SWITCHING DIODE GMB01-BT	GMB01BT
		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 305		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 307		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 309	C,D	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 310		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 501		LED SID1K10CXM or	QP4ZD1K10CXM
		LED LN66A.FN or	QP7Z000LN66A
		LED SLR-932C-20-AB or	QPQ80SLR932C
		LED L-1543F3C	NP4ZL1543F3C
D 502	C,D	LED SLR-981A or	QPQA00SLR981
		LED SLR-981B or	QPQB00SLR981
		LED SLR-981C	QPQC00SLR981
D 503		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 504		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 505		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M	
	SWITCHING DIODE GMB01-BT	GMB01BT	
D 506		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 507		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 508		SWITCHING DIODE 1N4148M or	NDTZ01N4148M
		SWITCHING DIODE 1N4148M or	QDTZ01N4148M
		SWITCHING DIODE GMB01-BT	GMB01BT
D 701		ZENER DIODE UZ-6.2BSB	QDTB0UZ6R2BS
D 702	ZENER DIODE UZ-6.2BSB	QDTB0UZ6R2BS	
D 703	ZENER DIODE UZ-6.2BSB	QDTB0UZ6R2BS	
D 751	ZENER DIODE UZ-5.1BS	QDTZ0UZ5R1BS	
D 752	ZENER DIODE UZ-5.1BS	QDTZ0UZ5R1BS	
D 753	ZENER DIODE UZ-5.1BS	QDTZ0UZ5R1BS	
D 754	ZENER DIODE UZ-5.1BS	QDTZ0UZ5R1BS	
D 755	SWITCHING DIODE 1N4148M or	NDTZ01N4148M	
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M	
	SWITCHING DIODE GMB01-BT	GMB01BT	
ICS			
IC 001 		PHOTO COUPLER PC120F or	QPEZ00PC120F
		PHOTOCOUPLER PC120 or	QP5Z000PC120
		PHOTOCOUPLER PS2561-1M or	QPEM0PS25611
		PHOTOCOUPLER PS2561-1D or	QPED0PS25611
		PHOTOCOUPLER PS2561-1H or	QPEH0PS25611
		PHOTOCOUPLER PS2561-1W or	QPEW0PS25611
		PHOTOCOUPLER PC123F or	QPEZ00PC123F
		PHOTOCOUPLER PC123	QPEZ000PC123
IC 002		IC KIA431 or	NSZLA0ZJY001
		IC KA431Z or	NSZLA0ZSM001
	IC L5431 or	QSZLA0ZSY004	
	IC AN1431T-(NSC)	QSBLA0ZMS001	
IC 301	IC, VIDEO LA7347	QSZLA0SSY006	
IC 302	IC, CCD LC89975M	QSMLA0SSY019	

Ref. No.	Mark	Description	Part No.
IC 401	A,B	IC:AUDIO LA7286	QSZLA0SSY007
IC 501		MICROCONTROLLER 8BIT SY/CXP88224-114Q or	QSMQA0RSN051
	C,D	MICROCONTROLLER 8BIT SY/CXP88224-115Q	QSMQB0RSN051
IC 501		MICROCONTROLLER 8BIT SY/CXP88132-148Q	QSMQA0RSN050
IC 502		IC:COMPARATOR KIA339P or	NSBLA0SJY019
		IC:COMPARATOR KA339 or	NSBLA0SSM002
		IC:COMPARATOR NJM2901N	QSBLA0SJR040
IC 503		IC:OP-AMP. KIA324P DIP-14 or	NSBLA0SJY002
		IC:OP-AMP. KA324	NSBLA0SSM001
IC 505		IC:MEMORY X24C02P or	QSMMA0SXC001
		IC ST24C02A-B1 or	GST24C02AB10
		IC:MEMORY 24LC02B/P	NSMMA0SMH003
IC 701		ZENER DIODE UZT33MTA	QCTZ00UZT33M
IC 751		IC NJU4052BD or	14D0438
		IC UPD4052BC or	QSMLA0SNE004
		IC TC4052BP or	QSMLA0STS003
		IC HEF4052BP	NSMLA0SPH001
IC504A		IC TA7291S (Not used C530)	14LW342
IC504B		IC LB1641 (Used C530)	QSBLA0SSY045
COILS			
L 001 		LINE FILTER FK0B160MH16 or	1170567
		LINE FILTER TL81-015-102	LLBT00ZPC002
L 002 		LINE FILTER 51MH UU10LF or	LLBG00ZSF003
		LINE FILTER 51MH 53230 or	LLBG00ZKT002
		LINE FILTER 51MH UU10.5-51MH	LLBG00ZF8003
L 003		LEAD INDUCTOR 22μH-K or	LLARKMUTU220
		LEAD INDUCTOR 22μH-K or	LLARKMPKV220
		LEAD INDUCTOR 22μH-K	LLARKMPFG220
L 004		LEAD INDUCTOR 22μH-K or	LLARKMUTU220
		LEAD INDUCTOR 22μH-K or	LLARKMPKV220
		LEAD INDUCTOR 22μH-K	LLARKMPFG220
L 005		BEAD CORE HF70BB3.5X10X1.3 or	XL03010TE001
		BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001
L 006		BEAD CORE HF70BB3.5X10X1.3 or	XL03010TE001
		BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001
L 007		BEAD CORE HF70BB3.5X10X1.3 or	XL03010TE001
		BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001
L 008		BEAD CORE HF70BB3.5X10X1.3 or	XL03010TE001
		BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001
L 051		PCB JUMPER D0.6-P5.0	JW5.0T
L 053		INDUCTOR 47μH-K	LLAXKCPFG470
L 301		INDUCTOR 180μH-K-26T or	LLAXKDTKA181
		INDUCTOR 180μH-K-26T	LLAXKATTU181
L 302		INDUCTOR 82μH-K	LLAXKCPFG820
L 303		INDUCTOR 330μH-K-26T or	LLAXKDTKA331
		INDUCTOR 330μH-K-26T	LLAXKATTU331
L 304		INDUCTOR 56μH-K	LLAXKCPFG560
L 305		INDUCTOR 10μH-K-26T or	LLAXKDTKA100
		INDUCTOR 10μH-K-26T	LLAXKATTU100
L 306		INDUCTOR 27μH-K	LLAXKCPFG270
L 308		INDUCTOR 330μH-K-26T or	LLAXKDTKA331
		INDUCTOR 330μH-K-26T	LLAXKATTU331
L 309		INDUCTOR 4.7μH-K-5FT or	LLARKDSKA4R7
		INDUCTOR 4.7μH-K-5FT or	LLARKBSTU4R7
		INDUCTOR 4.7μH-K-5FT or	LLARKMSFS4R7
		INDUCTOR 4.7μH-K	LLAXKCPFG4R7
L 310		INDUCTOR 68μH-K	LLAXKCPFG680
L 311		INDUCTOR 27μH-K	LLAXKCPFG270
L 312		INDUCTOR 68μH-K	LLAXKCPFG680
L 316		INDUCTOR 47μH-K-5FT or	LLARKDSKA470
		INDUCTOR 47μH-K-5FT or	LLARKBSTU470
		INDUCTOR 47μH-K-5FT or	LLARKMSFS470
		INDUCTOR 47μH-K	LLAXKCPFG470
L 318		INDUCTOR 10μH-K-26T or	LLAXKDTKA100
		INDUCTOR 10μH-K-26T	LLAXKATTU100

Ref. No.	Mark	Description	Part No.
L 319		INDUCTOR 10μH-K-26T	LLAXKATTU100
L 320		INDUCTOR 47μH-K	LLAXKCPFG470
L 321		PCB JUMPER D0.6-P5.0	JW5.0T
L 401		PCB JUMPER D0.6-P5.0	JW5.0T
L 501		INDUCTOR 10μH-K-26T or INDUCTOR 56μH-K-5FT or INDUCTOR 56μH-K-5FT or INDUCTOR 56μH-K-5FT or INDUCTOR 56μH-K	LLAXKATTU100 LLARKDSKA560 LLARKBSTU560 LLARKMSFS560 LLAXKCPFG560
L 502	A,B	INDUCTOR 15μH-K-26T or INDUCTOR 15μH-K-26T	LLAXKDTKA150 LLAXKATTU150
L 502	C,D	PCB JUMPER D0.6-P5.0	JW5.0T
L 701		PCB JUMPER D0.6-P5.0	JW5.0T
L 702		INDUCTOR 47μH-K-5FT or INDUCTOR 47μH-K-5FT or INDUCTOR 47μH-K	LLARKDSKA470 LLARKBSTU470 LLARKMSFS470 LLAXKCPFG470
L 703		PCB JUMPER D0.6-P5.0	JW5.0T
J 97	C,D	FARRITE BEAD CORE HF55BTS3.5X4.5B	LLBF00ZTE003
T 401		COIL, OSC 1027QM30003B7- or COIL, OSC R-12 P687 X or COIL, OSC 7L1A35N	LFA07V0VD003 LFA07V0MM045 LFA07V0LH002
<b>TRANSISTORS</b>			
Q 002		TRANSISTOR 2SC4517 or TRANSISTOR 2SC5239 or TRANSISTOR 2SC3866	QQPZ02SC4517 QQQZ02SC5239 QQPZ02SC3866
Q 011		TRANSISTOR 2SC4204 or TRANSISTOR 2SC3576	QQSZ02SC4204 QQSZ02SC3576
Q 051		TRANSISTOR KTC3199(Y) or TRANSISTOR KTC3199(GR) or TRANSISTOR KSC2785(Y) or TRANSISTOR KSC2785(G) or TRANSISTOR 2SC536SP(E) or TRANSISTOR 2SC536SP(F)	NQSY0KTC3199 NQS10KTC3199 NQSY0KSC2785 NQS0KSC2785 C536SEZ C536SFZ
Q 052		TRANSISTOR 2SD400(F)	D400FZ
Q 053		RES. BUILT-IN TRANSISTOR KSR2205 or RES. BUILT-IN TRANSISTOR 2SA1654	NQSZ0KSR2205 QQSZ02SA1654
Q 054		RES. BUILT-IN TRANSISTOR KRA103M or RES. BUILT-IN TRANSISTOR KSR2203 or RES. BUILT-IN TRANSISTOR 2SA1346	NQSZ0KRA103M NQSZ0KSR2203 A1346Z
Q 055		TRANSISTOR KTA1266(Y) or TRANSISTOR KTA1266(GR) or TRANSISTOR 2SA1317(S) or TRANSISTOR 2SA1317(T)	NQSY0KTA1266 NQS40KTA1266 A1317SZ A1317TZ
Q 056		TRANSISTOR KTA1266(Y) or TRANSISTOR KTA1266(GR) or TRANSISTOR 2SA1317(S) or TRANSISTOR 2SA1317(T)	NQSY0KTA1266 NQS40KTA1266 A1317SZ A1317TZ
Q 057		RES. BUILT-IN TRANSISTOR KRC103M or RES. BUILT-IN TRANSISTOR KSR1203 or RES. BUILT-IN TRANSISTOR 2SC3400	NQSZ0KRC103M NQSZ0KSR1203 C3400Z
Q 058		RES. BUILT-IN TRANSISTOR KRC103M or RES. BUILT-IN TRANSISTOR KSR1203 or RES. BUILT-IN TRANSISTOR 2SC3400	NQSZ0KRC103M NQSZ0KSR1203 C3400Z
Q 061		TRANSISTOR KTC3203(Y) or TRANSISTOR 2SD734F-NP-AQ or TRANSISTOR 2SD734G-NP-AQ or TRANSISTOR 2SC2120-Y	NQSY0KTC3203 QQSF002SD734 QQSG002SD734 QQSY02SC2120
Q 301		TRANSISTOR KTC3199(Y) or	NQSY0KTC3199

Ref. No.	Mark	Description	Part No.
		TRANSISTOR KTC3199(GR) or TRANSISTOR KSC2785(Y) or TRANSISTOR KSC2785(G) or TRANSISTOR 2SC536SP(E) or TRANSISTOR 2SC536SP(F)	NQS10KTC3199 NQSY0KSC2785 NQS0KSC2785 C536SEZ C536SFZ
Q 302		TRANSISTOR KTC3193(Y) or TRANSISTOR 2SC2839(E) or TRANSISTOR 2SC2839(F)	NQSY0KTC3193 C2839EZ C2839FZ
Q 303		TRANSISTOR KTC3193(Y) or TRANSISTOR 2SC2839(E) or TRANSISTOR 2SC2839(F)	NQSY0KTC3193 C2839EZ C2839FZ
Q 307		RES. BUILT-IN TRANSISTOR KRC106M or RES. BUILT-IN TRANSISTOR KSR1214 or RES. BUILT-IN TRANSISTOR 2SC4133	NQSZ0KRC106M NQSZ0KSR1214 QQSZ02SC4133
Q 308		TRANSISTOR KTA1266(Y) or TRANSISTOR KTA1266(GR) or TRANSISTOR 2SA1317(S) or TRANSISTOR 2SA1317(T)	NQSY0KTA1266 NQS40KTA1266 A1317SZ A1317TZ
Q 309		TRANSISTOR KTA1267(Y) or TRANSISTOR KTA1267(GR) or TRANSISTOR KSA1175(Y) or TRANSISTOR KSA1175(G) or TRANSISTOR 2SA608SP(E) or TRANSISTOR 2SA608SP(F)	NQSY0KTA1267 NQS10KTA1267 NQSY0KSA1175 NQS0KSA1175 A608SEZ A608SFZ
Q 310		TRANSISTOR KTA1267(Y) or TRANSISTOR KTA1267(GR) or TRANSISTOR KSA1175(Y) or TRANSISTOR KSA1175(G) or TRANSISTOR 2SA608SP(E) or TRANSISTOR 2SA608SP(F)	NQSY0KTA1267 NQS10KTA1267 NQSY0KSA1175 NQS0KSA1175 A608SEZ A608SFZ
Q 311		RES. BUILT-IN TRANSISTOR KRA109M or RES. BUILT-IN TRANSISTOR KSR2208 or RES. BUILT-IN TRANSISTOR 2SA1347	NQSZ0KRA109M NQSZ0KSR2208 QQSZ02SA1347
Q 312		RES. BUILT-IN TRANSISTOR KRC103M or RES. BUILT-IN TRANSISTOR KSR1203 or RES. BUILT-IN TRANSISTOR 2SC3400	NQSZ0KRC103M NQSZ0KSR1203 C3400Z
Q 316	C,D	RES. BUILT-IN TRANSISTOR KRC103M or RES. BUILT-IN TRANSISTOR KSR1203 or RES. BUILT-IN TRANSISTOR 2SC3400	NQSZ0KRC103M NQSZ0KSR1203 C3400Z
Q 319	A,B	TRANSISTOR KTC3193(Y) or TRANSISTOR 2SC2839(E) or TRANSISTOR 2SC2839(F)	NQSY0KTC3193 C2839EZ C2839FZ
Q 320		TRANSISTOR KTC3193(Y) or TRANSISTOR 2SC2839(E) or TRANSISTOR 2SC2839(F)	NQSY0KTC3193 C2839EZ C2839FZ
Q 401		TRANSISTOR 2SC3331(T) or TRANSISTOR 2SC3331(U)	QSC3331TNPAA QSC3331UNPAA
Q 501		PHOTO TRANSISTOR ST-316R2-B	QP4B0ST316R2
Q 502		PHOTO TRANSISTOR ST-316R2-B	QP4B0ST316R2
Q 503		PHOTO TRANSISTOR ST-316R2-B	QP4B0ST316R2
Q 504	C,D	TRANSISTOR KTA1267(Y) or TRANSISTOR KTA1267(GR) or TRANSISTOR KSA1175(Y) or TRANSISTOR KSA1175(G) or TRANSISTOR 2SA608SP(E) or TRANSISTOR 2SA608SP(F)	NQSY0KTA1267 NQS10KTA1267 NQSY0KSA1175 NQS0KSA1175 A608SEZ A608SFZ
Q 505	C,D	RES. BUILT-IN TRANSISTOR KRC103M or RES. BUILT-IN TRANSISTOR KSR1203 or	NQSZ0KRC103M NQSZ0KSR1203



Ref. No.	Mark	Description	Part No.
Q 506		RES. BUILT-IN TRANSISTOR 2SC3400 or RES. BUILT-IN TRANSISTOR KRA103M	C3400Z NQSZ0KRA103M
		RES. BUILT-IN TRANSISTOR KSR2203 or	NQSZ0KSR2203
Q 507		RES. BUILT-IN TRANSISTOR 2SA1346 or RES. BUILT-IN TRANSISTOR KRC103M	A1346Z NQSZ0KRC103M
		RES. BUILT-IN TRANSISTOR KSR1203 or	NQSZ0KSR1203
Q 508		RES. BUILT-IN TRANSISTOR 2SC3400 TRANSISTOR KTC3199(BL) or	C3400Z NQS50KTC3199
		TRANSISTOR KSC2785(L) or	NQSL0KSC2785
Q 702		TRANSISTOR 2SC536SP(G) TRANSISTOR KTC3199(Y) or	QSGSC536SPA NQSY0KTC3199
		TRANSISTOR KTC3199(GR) or	NQS10KTC3199
		TRANSISTOR KSC2785(Y) or	NQSY0KSC2785
		TRANSISTOR KSC2785(G) or	NQSG0KSC2785
		TRANSISTOR 2SC536SP(E) or	C536SEZ
Q 703		TRANSISTOR 2SC536SP(F) RES. BUILT-IN TRANSISTOR KSR2205 or	C536SFZ NQSZ0KSR2205
		RES. BUILT-IN TRANSISTOR 2SA1654	QGSZ02SA1654
Q 704		RES. BUILT-IN TRANSISTOR KSR2205 or	NQSZ0KSR2205
		RES. BUILT-IN TRANSISTOR 2SA1654	QGSZ02SA1654
Q 705		RES. BUILT-IN TRANSISTOR KSR2205 or	NQSZ0KSR2205
		RES. BUILT-IN TRANSISTOR 2SA1654	QGSZ02SA1654
Q 751		TRANSISTOR KTC3199(Y) or	NQSY0KTC3199
		TRANSISTOR KTC3199(GR) or	NQS10KTC3199
		TRANSISTOR KSC2785(Y) or	NQSY0KSC2785
		TRANSISTOR KSC2785(G) or	NQSG0KSC2785
		TRANSISTOR 2SC536SP(E) or	C536SEZ
		TRANSISTOR 2SC536SP(F)	C536SFZ
<b>RESISTORS</b>			
R 002		FIXED METAL OXIDE FILM RES. 2W J 82K $\Omega$ or	1330513
		FIXED METAL OXIDE FILM RES. 2W J 82K $\Omega$ or	RN02JZPZ0823
		FIXED METAL OXIDE FILM RES. 2W J 82K $\Omega$	RN02823KE009
R 004		CARBON RES. 1/4W J 82K $\Omega$	RCX4JATZ0823
R 005		CARBON RES. 1/4W J 82K $\Omega$	RCX4JATZ0823
R 006		CARBON RES. 1/4W J 82K $\Omega$	RCX4JATZ0823
R 007		CARBON RES. 1/4W J 82K $\Omega$	RCX4JATZ0823
R 008		CARBON RES. 1/4W J 39 $\Omega$	RCX4JATZ0390
R 009		CARBON RES. 1/4W J 39 $\Omega$	RCX4JATZ0390
R 010		CARBON RES. 1/4W J 39 $\Omega$	RCX4JATZ0390
R 011		CARBON RES. 1/4W J 3.9K $\Omega$	RCX4JATZ0392
R 012		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 017		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 018		CARBON RES. 1/4W J 2.7 $\Omega$	RCX4JATZ02R7
R 019		CARBON RES. 1/4W J 2.7 $\Omega$	RCX4JATZ02R7
R 020		CARBON RES. 1/4W J 470 $\Omega$ or	RCX4JATZ0471
		CARBON RES. 1/6W J 470 $\Omega$	RCX6JATZ0471
R 021		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 023		CARBON RES. 1/4W G 2.2K $\Omega$	RCX4GATZ0222
R 024		CARBON RES. 1/4W J 820 $\Omega$ or	RCX4JATZ0821
		CARBON RES. 1/6W J 820 $\Omega$	RCX6JATZ0821
R 025		CARBON RES. 1/4W G 2K $\Omega$	RCX4GATZ0202
R 051		CARBON RES. 1/4W J 68K $\Omega$	RCX4JATZ0683
R 052		CARBON RES. 1/4W J 3.9K $\Omega$	RCX4JATZ0392
R 054		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 055		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 056		CARBON RES. 1/4W J 1.5K $\Omega$	RCX4JATZ0152
R 057		CARBON RES. 1/4W J 1.3K $\Omega$ or	RCX4JATZ0132
		CARBON RES. 1/6W J 1.3K $\Omega$	RCX6JATZ0132

Ref. No.	Mark	Description	Part No.
R 058		CARBON RES. 1/4W J 100K $\Omega$ or	RCX4JATZ0104
		CARBON RES. 1/6W J 100K $\Omega$	RCX6JATZ0104
R 059		CARBON RES. 1/4W J 820 $\Omega$ or	RCX4JATZ0821
		CARBON RES. 1/6W J 820 $\Omega$	RCX6JATZ0821
R 060		PCB JUMPER D0.6-P5.0	JW5.0T
R 061		CARBON RES. 1/4W J 100K $\Omega$ or	RCX4JATZ0104
		CARBON RES. 1/6W J 100K $\Omega$	RCX6JATZ0104
R 062		CARBON RES. 1/4W J 820 $\Omega$ or	RCX4JATZ0821
		CARBON RES. 1/6W J 820 $\Omega$	RCX6JATZ0821
R 064		CARBON RES. 1/4W J 47K $\Omega$ or	RCX4JATZ0473
		CARBON RES. 1/6W J 47K $\Omega$	RCX6JATZ0473
R 065		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 066		CARBON RES. 1/4W J 56 $\Omega$ or	RCX4JATZ0560
		CARBON RES. 1/6W J 56 $\Omega$	RCX6JATZ0560
R 067		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 073		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 074		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 075		PCB JUMPER D0.6-P5.0	JW5.0T
R 301		CARBON RES. 1/4W J 5.6K $\Omega$ or	RCX4JATZ0562
		CARBON RES. 1/6W J 5.6K $\Omega$	RCX6JATZ0562
R 302		CARBON RES. 1/4W J 1.2K $\Omega$ or	RCX4JATZ0122
		CARBON RES. 1/6W J 1.2K $\Omega$	RCX6JATZ0122
R 303		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 304		CARBON RES. 1/4W J 820 $\Omega$ or	RCX4JATZ0821
		CARBON RES. 1/6W J 820 $\Omega$	RCX6JATZ0821
R 305		CARBON RES. 1/4W J 3.9K $\Omega$	RCX4JATZ0392
R 306		CARBON RES. 1/4W J 1.5K $\Omega$	RCX4JATZ0152
R 307		CARBON RES. 1/4W J 3.9K $\Omega$	RCX4JATZ0392
R 308		CARBON RES. 1/4W J 1.5K $\Omega$	RCX4JATZ0152
R 309		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 310		CARBON RES. 1/4W J 390 $\Omega$ or	RCX4JATZ0391
		CARBON RES. 1/6W J 390 $\Omega$	RCX6JATZ0391
R 311		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 312		CARBON RES. 1/4W J 390 $\Omega$ or	RCX4JATZ0391
		CARBON RES. 1/6W J 390 $\Omega$	RCX6JATZ0391
R 313		CARBON RES. 1/4W J 680 $\Omega$	RCX4JATZ0681
R 315	A,B	CARBON RES. 1/4W J 330 $\Omega$ or	RCX4JATZ0331
		CARBON RES. 1/6W J 330 $\Omega$	RCX6JATZ0331
R 315	C,D	CARBON RES. 1/4W J 270 $\Omega$ or	RCX4JATZ0271
		CARBON RES. 1/6W J 270 $\Omega$	RCX6JATZ0271
R 316		CARBON RES. 1/4W J 1.2K $\Omega$ or	RCX4JATZ0122
		CARBON RES. 1/6W J 1.2K $\Omega$	RCX6JATZ0122
R 317		CARBON RES. 1/4W J 470 $\Omega$ or	RCX4JATZ0471
		CARBON RES. 1/6W J 470 $\Omega$	RCX6JATZ0471
R 319		CARBON RES. 1/4W J 27K $\Omega$ or	RCX4JATZ0273
		CARBON RES. 1/6W J 27K $\Omega$	RCX6JATZ0273
R 320		CARBON RES. 1/4W J 8.2K $\Omega$ or	RCX4JATZ0822
		CARBON RES. 1/6W J 8.2K $\Omega$	RCX6JATZ0822
R 321		CARBON RES. 1/4W J 6.8K $\Omega$ or	RCX4JATZ0682
		CARBON RES. 1/6W J 6.8K $\Omega$	RCX6JATZ0682
R 322		CARBON RES. 1/4W J 470 $\Omega$ or	RCX4JATZ0471
		CARBON RES. 1/6W J 470 $\Omega$	RCX6JATZ0471
R 323		PCB JUMPER D0.6-P5.0	JW5.0T
R 324		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 326		CARBON RES. 1/4W J 15K $\Omega$ or	RCX4JATZ0153
		CARBON RES. 1/6W J 15K $\Omega$	RCX6JATZ0153
R 327		CARBON RES. 1/4W J 680 $\Omega$	RCX4JATZ0681
R 328		CARBON RES. 1/4W J 680 $\Omega$	RCX4JATZ0681
R 329		CARBON RES. 1/4W J 220 $\Omega$ or	RCX4JATZ0221
		CARBON RES. 1/6W J 220 $\Omega$	RCX6JATZ0221
R 331		CARBON RES. 1/4W J 470 $\Omega$ or	RCX4JATZ0471
		CARBON RES. 1/6W J 470 $\Omega$	RCX6JATZ0471
R 332		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222



Ref. No.	Mark	Description	Part No.
R 334		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 335		CARBON RES. 1/4W J 390 $\Omega$ or	RCX4JATZ0391
		CARBON RES. 1/6W J 390 $\Omega$	RCX6JATZ0391
R 336		CARBON RES. 1/4W J 470 $\Omega$ or	RCX4JATZ0471
		CARBON RES. 1/6W J 470 $\Omega$	RCX6JATZ0471
R 337		CARBON RES. 1/4W J 1.5K $\Omega$	RCX4JATZ0152
R 338		CARBON RES. 1/4W J 2.7K $\Omega$ or	RCX4JATZ0272
		CARBON RES. 1/6W J 2.7K $\Omega$	RCX6JATZ0272
R 339		CARBON RES. 1/4W J 2.7K $\Omega$ or	RCX4JATZ0272
		CARBON RES. 1/6W J 2.7K $\Omega$	RCX6JATZ0272
R 340		CARBON RES. 1/4W J 2.7K $\Omega$ or	RCX4JATZ0272
		CARBON RES. 1/6W J 2.7K $\Omega$	RCX6JATZ0272
R 341		CARBON RES. 1/4W J 560 $\Omega$ or	RCX4JATZ0561
		CARBON RES. 1/6W J 560 $\Omega$	RCX6JATZ0561
R 342		CARBON RES. 1/4W J 390 $\Omega$ or	RCX4JATZ0391
		CARBON RES. 1/6W J 390 $\Omega$	RCX6JATZ0391
R 344		CARBON RES. 1/4W J 2.7K $\Omega$ or	RCX4JATZ0272
		CARBON RES. 1/6W J 2.7K $\Omega$	RCX6JATZ0272
R 348	C,D	CARBON RES. 1/4W J 1M $\Omega$ or	RCX4JATZ0105
		CARBON RES. 1/6W J 1M $\Omega$	RCX6JATZ0105
R 349		CARBON RES. 1/4W J 1M $\Omega$ or	RCX4JATZ0105
		CARBON RES. 1/6W J 1M $\Omega$	RCX6JATZ0105
R 350		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 351		CARBON RES. 1/4W J 8.2K $\Omega$ or	RCX4JATZ0822
		CARBON RES. 1/6W J 8.2K $\Omega$	RCX6JATZ0822
R 353		CARBON RES. 1/4W J 100 $\Omega$ or	RCX4JATZ0101
		CARBON RES. 1/6W J 100 $\Omega$	RCX6JATZ0101
R 354		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 355		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 356		CARBON RES. 1/4W J 3.9K $\Omega$	RCX4JATZ0392
R 357		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 358		PCB JUMPER D0.6-P5.0	JW5.0T
R 359		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 360		CARBON RES. 1/4W J 5.6K $\Omega$ or	RCX4JATZ0562
		CARBON RES. 1/6W J 5.6K $\Omega$	RCX6JATZ0562
R 361		CARBON RES. 1/4W J 1.8K $\Omega$ or	RCX4JATZ0182
		CARBON RES. 1/6W J 1.8K $\Omega$	RCX6JATZ0182
R 362	A,B	CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 363		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 364		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 371		CARBON RES. 1/4W J 820 $\Omega$ or	RCX4JATZ0821
		CARBON RES. 1/6W J 820 $\Omega$	RCX6JATZ0821
R 372		CARBON RES. 1/4W J 1.8K $\Omega$ or	RCX4JATZ0182
		CARBON RES. 1/6W J 1.8K $\Omega$	RCX6JATZ0182
R 373	A,B	CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 373	C,D	PCB JUMPER D0.6-P5.0	JW5.0T
R 374	A,B	CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 375		CARBON RES. 1/4W J 680K $\Omega$ or	RCX4JATZ0684
		CARBON RES. 1/6W J 680K $\Omega$	RCX6JATZ0684
R 376		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 377		CARBON RES. 1/4W J 270 $\Omega$ or	RCX4JATZ0271
		CARBON RES. 1/6W J 270 $\Omega$	RCX6JATZ0271
R 378		PCB JUMPER D0.6-P5.0	JW5.0T
R 379		CARBON RES. 1/4W J 680 $\Omega$	RCX4JATZ0681
R 380		CARBON RES. 1/4W J 270 $\Omega$ or	RCX4JATZ0271
		CARBON RES. 1/6W J 270 $\Omega$	RCX6JATZ0271
R 401		CARBON RES. 1/4W J 15 $\Omega$	RCX4JATZ0150
R 402		CARBON RES. 1/4W J 180 $\Omega$ or	RCX4JATZ0181
		CARBON RES. 1/6W J 180 $\Omega$	RCX6JATZ0181
R 403		CARBON RES. 1/4W J 47 $\Omega$ or	RCX4JATZ0470
		CARBON RES. 1/6W J 47 $\Omega$	RCX6JATZ0470
R 404		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 405		CARBON RES. 1/4W J 4.7 $\Omega$ or	RCX4JATZ04R7

Ref. No.	Mark	Description	Part No.
R 406		CARBON RES. 1/6W J 4.7 $\Omega$	RCX6JATZ04R7
		CARBON RES. 1/4W J 150K $\Omega$ or	RCX4JATZ0154
		CARBON RES. 1/6W J 150K $\Omega$	RCX6JATZ0154
R 407		CARBON RES. 1/4W J 120 $\Omega$ or	RCX4JATZ0121
		CARBON RES. 1/6W J 120 $\Omega$	RCX6JATZ0121
R 408		CARBON RES. 1/4W J 330K $\Omega$ or	RCX4JATZ0334
		CARBON RES. 1/6W J 330K $\Omega$	RCX6JATZ0334
R 409		CARBON RES. 1/4W J 12K $\Omega$ or	RCX4JATZ0123
		CARBON RES. 1/6W J 12K $\Omega$	RCX6JATZ0123
R 410		CARBON RES. 1/4W J 5.6K $\Omega$ or	RCX4JATZ0562
		CARBON RES. 1/6W J 5.6K $\Omega$	RCX6JATZ0562
R 411		CARBON RES. 1/4W J 3.9K $\Omega$	RCX4JATZ0392
R 412		CARBON RES. 1/4W J 6.8K $\Omega$ or	RCX4JATZ0682
		CARBON RES. 1/6W J 6.8K $\Omega$	RCX6JATZ0682
R 413		CARBON RES. 1/4W J 15K $\Omega$ or	RCX4JATZ0153
		CARBON RES. 1/6W J 15K $\Omega$	RCX6JATZ0153
R 414		CARBON RES. 1/4W J 1.8M $\Omega$ or	RCX4JATZ0185
		CARBON RES. 1/6W J 1.8M $\Omega$	RCX6JATZ0185
R 415		CARBON RES. 1/4W J 1.8K $\Omega$ or	RCX4JATZ0182
		CARBON RES. 1/6W J 1.8K $\Omega$	RCX6JATZ0182
R 416		CARBON RES. 1/4W J 150 $\Omega$	RCX4JATZ0151
R 417		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 418		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 419		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 420		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 421		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 456		PCB JUMPER D0.6-P5.0	JW5.0T
R 502		CARBON RES. 1/4W J 680K $\Omega$ or	RCX4JATZ0684
		CARBON RES. 1/6W J 680K $\Omega$	RCX6JATZ0684
R 503		CARBON RES. 1/4W J 680K $\Omega$ or	RCX4JATZ0684
		CARBON RES. 1/6W J 680K $\Omega$	RCX6JATZ0684
R 504		CARBON RES. 1/4W J 39 $\Omega$	RCX4JATZ0390
R 505		CARBON RES. 1/4W J 39 $\Omega$	RCX4JATZ0390
R 506		CARBON RES. 1/4W J 47K $\Omega$ or	RCX4JATZ0473
		CARBON RES. 1/6W J 47K $\Omega$	RCX6JATZ0473
R 507		CARBON RES. 1/4W J 150 $\Omega$	RCX4JATZ0151
R 508		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 509		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 510		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 511		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 512		CARBON RES. 1/4W J 4.7M $\Omega$ or	RCX4JATZ0475
		CARBON RES. 1/6W J 4.7M $\Omega$	RCX6JATZ0475
R 513		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 514		CARBON RES. 1/4W J 47K $\Omega$ or	RCX4JATZ0473
		CARBON RES. 1/6W J 47K $\Omega$	RCX6JATZ0473
R 515		CARBON RES. 1/4W J 330K $\Omega$ or	RCX4JATZ0334
		CARBON RES. 1/6W J 330K $\Omega$	RCX6JATZ0334
R 516		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 517		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 518		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 519		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 520		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 521		CARBON RES. 1/4W J 120K $\Omega$ or	RCX4JATZ0124
		CARBON RES. 1/6W J 120K $\Omega$	RCX6JATZ0124
R 522		CARBON RES. 1/4W J 56K $\Omega$ or	RCX4JATZ0563
		CARBON RES. 1/6W J 56K $\Omega$	RCX6JATZ0563
R 523	C,D	CARBON RES. 1/4W J 27K $\Omega$ or	RCX4JATZ0273
		CARBON RES. 1/6W J 27K $\Omega$	RCX6JATZ0273
R 524		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103

Ref. No.	Mark	Description	Part No.
R 525		CARBON RES. 1/4W J 330K $\Omega$ or	RCX4JATZ0334
		CARBON RES. 1/6W J 330K $\Omega$	RCX6JATZ0334
R 526		CARBON RES. 1/4W J 470 $\Omega$ or	RCX4JATZ0471
		CARBON RES. 1/6W J 470 $\Omega$	RCX6JATZ0471
R 527		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 528		CARBON RES. 1/4W J 39K $\Omega$ or	RCX4JATZ0393
		CARBON RES. 1/6W J 39K $\Omega$	RCX6JATZ0393
R 529		CARBON RES. 1/4W J 39K $\Omega$ or	RCX4JATZ0393
		CARBON RES. 1/6W J 39K $\Omega$	RCX6JATZ0393
R 530		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 531		CARBON RES. 1/4W J 5.6K $\Omega$ or	RCX4JATZ0562
		CARBON RES. 1/6W J 5.6K $\Omega$	RCX6JATZ0562
R 532		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 533		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 534		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 535		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 536		CARBON RES. 1/4W J 330K $\Omega$ or	RCX4JATZ0334
		CARBON RES. 1/6W J 330K $\Omega$	RCX6JATZ0334
R 537	C,D	CARBON RES. 1/4W J 47K $\Omega$ or	RCX4JATZ0473
		CARBON RES. 1/6W J 47K $\Omega$	RCX6JATZ0473
R 538	C,D	CARBON RES. 1/4W J 220K $\Omega$ or	RCX4JATZ0224
		CARBON RES. 1/6W J 220K $\Omega$	RCX6JATZ0224
R 539	C,D	CARBON RES. 1/4W J 3.3K $\Omega$ or	RCX4JATZ0332
		CARBON RES. 1/6W J 3.3K $\Omega$	RCX6JATZ0332
R 540	A,B	CARBON RES. 1/4W J 3.3K $\Omega$ or	RCX4JATZ0332
		CARBON RES. 1/6W J 3.3K $\Omega$	RCX6JATZ0332
R 540	C,D	CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 541		CARBON RES. 1/4W J 820 $\Omega$ or	RCX4JATZ0821
		CARBON RES. 1/6W J 820 $\Omega$	RCX6JATZ0821
R 542		CARBON RES. 1/4W J 560K $\Omega$ or	RCX4JATZ0564
		CARBON RES. 1/6W J 560K $\Omega$	RCX6JATZ0564
R 543		CARBON RES. 1/4W J 330K $\Omega$ or	RCX4JATZ0334
		CARBON RES. 1/6W J 330K $\Omega$	RCX6JATZ0334
R 544		CARBON RES. 1/4W J 4.7K $\Omega$	RCX4JATZ0472
R 550		CARBON RES. 1/4W J 1 $\Omega$	RCX4JATZ0010
R 551		PCB JUMPER D0.6-P5.0	JW5.0T
R 552		CARBON RES. 1/4W J 1.8K $\Omega$ or	RCX4JATZ0182
		CARBON RES. 1/6W J 1.8K $\Omega$	RCX6JATZ0182
R 553		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 554		CARBON RES. 1/4W J 1.2K $\Omega$ or	RCX4JATZ0122
		CARBON RES. 1/6W J 1.2K $\Omega$	RCX6JATZ0122
R 555		CARBON RES. 1/4W J 1.5K $\Omega$	RCX4JATZ0152
R 559		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 561	C,D	CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 563		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 564	A,B	CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 565		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 567		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 568		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 571		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 575		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 576	A,B	CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 576	C,D	CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 579		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 580		CARBON RES. 1/4W J 18K $\Omega$ or	RCX4JATZ0183
		CARBON RES. 1/6W J 18K $\Omega$	RCX6JATZ0183
R 581		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 582		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 583		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 585		CARBON RES. 1/4W J 1.5K $\Omega$	RCX4JATZ0152
R 586		CARBON RES. 1/4W J 1 $\Omega$	RCX4JATZ0010
R 587		CARBON RES. 1/4W J 1 $\Omega$	RCX4JATZ0010

Ref. No.	Mark	Description	Part No.
R 588		CARBON RES. 1/4W J 1 $\Omega$	RCX4JATZ0010
R 589		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 590		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 591		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 592		PCB JUMPER D0.6-P5.0	JW5.0T
R 593		CARBON RES. 1/4W J 100K $\Omega$ or	RCX4JATZ0104
		CARBON RES. 1/6W J 100K $\Omega$	RCX6JATZ0104
R 594		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 595		CARBON RES. 1/4W J 47 $\Omega$ or	RCX4JATZ0470
		CARBON RES. 1/6W J 47 $\Omega$	RCX6JATZ0470
R 596		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 597		CARBON RES. 1/4W J 1.2K $\Omega$ or	RCX4JATZ0122
		CARBON RES. 1/6W J 1.2K $\Omega$	RCX6JATZ0122
R 598		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 599		CARBON RES. 1/4W J 220 $\Omega$ or	RCX4JATZ0221
		CARBON RES. 1/6W J 220 $\Omega$	RCX6JATZ0221
R 600		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 601		CARBON RES. 1/4W J 12K $\Omega$ or	RCX4JATZ0123
		CARBON RES. 1/6W J 12K $\Omega$	RCX6JATZ0123
R 607		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 608		PCB JUMPER D0.6-P5.0	JW5.0T
R 703		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 704		CARBON RES. 1/4W J 47K $\Omega$ or	RCX4JATZ0473
		CARBON RES. 1/6W J 47K $\Omega$	RCX6JATZ0473
R 705		CARBON RES. 1/4W J 33K $\Omega$ or	RCX4JATZ0333
		CARBON RES. 1/6W J 33K $\Omega$	RCX6JATZ0333
R 706		CARBON RES. 1/4W J 2.4K $\Omega$	RCX4JATZ0242
R 707		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 708		CARBON RES. 1/4W J 10K $\Omega$	RCX4JATZ0103
R 709		CARBON RES. 1/4W J 100K $\Omega$ or	RCX4JATZ0104
		CARBON RES. 1/6W J 100K $\Omega$	RCX6JATZ0104
R 710		CARBON RES. 1/4W J 100K $\Omega$ or	RCX4JATZ0104
		CARBON RES. 1/6W J 100K $\Omega$	RCX6JATZ0104
R 711		CARBON RES. 1/4W J 12K $\Omega$ or	RCX4JATZ0123
		CARBON RES. 1/6W J 12K $\Omega$	RCX6JATZ0123
R 712		CARBON RES. 1/4W J 75 $\Omega$ or	RCX4JATZ0750
		CARBON RES. 1/6W J 75 $\Omega$	RCX6JATZ0750
R 713		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 751		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 752		CARBON RES. 1/4W J 150 $\Omega$	RCX4JATZ0151
R 753		CARBON RES. 1/4W J 68 $\Omega$ or	RCX4JATZ0680
		CARBON RES. 1/6W J 68 $\Omega$	RCX6JATZ0680
R 754		CARBON RES. 1/4W J 150 $\Omega$	RCX4JATZ0151
R 755		CARBON RES. 1/4W J 68 $\Omega$ or	RCX4JATZ0680
		CARBON RES. 1/6W J 68 $\Omega$	RCX6JATZ0680
R 756		CARBON RES. 1/4W J 5.6K $\Omega$ or	RCX4JATZ0562
		CARBON RES. 1/6W J 5.6K $\Omega$	RCX6JATZ0562
R 758		CARBON RES. 1/4W J 27K $\Omega$ or	RCX4JATZ0273
		CARBON RES. 1/6W J 27K $\Omega$	RCX6JATZ0273
R 759		CARBON RES. 1/4W J 27K $\Omega$ or	RCX4JATZ0273
		CARBON RES. 1/6W J 27K $\Omega$	RCX6JATZ0273
R 760		CARBON RES. 1/4W J 820 $\Omega$ or	RCX4JATZ0821
		CARBON RES. 1/6W J 820 $\Omega$	RCX6JATZ0821
R 761		CARBON RES. 1/4W J 820 $\Omega$ or	RCX4JATZ0821
		CARBON RES. 1/6W J 820 $\Omega$	RCX6JATZ0821
R 762		CARBON RES. 1/4W J 1K $\Omega$	RCX4JATZ0102
R 763		CARBON RES. 1/4W J 100K $\Omega$ or	RCX4JATZ0104
		CARBON RES. 1/6W J 100K $\Omega$	RCX6JATZ0104
R 764		CARBON RES. 1/4W J 560 $\Omega$ or	RCX4JATZ0561
		CARBON RES. 1/6W J 560 $\Omega$	RCX6JATZ0561
R 765		CARBON RES. 1/4W J 36K $\Omega$ or	RCX4JATZ0363
		CARBON RES. 1/6W J 36K $\Omega$	RCX6JATZ0363

Ref. No.	Mark	Description	Part No.
R 766 J 35		PCB JUMPER D0.6-P5.0 CARBON RES. 1/4W J 2.2K $\Omega$ or CARBON RES. 1/6W J 2.2K $\Omega$	JW5.0T RCX4JZPZ0222 RCX6JZPZ0222
<b>SWITCHES</b>			
SW 501		TACT SWITCH SKHHAP or TACT SWITCH KSM0614B or TACT SWITCH KPT-1105BM or TACT SWITCH DHT-1102C or TACT SWITCH EVQ PAC 09K or TACT SWITCH EVQ JAC 09K	SST0101AL028 SST0101HH013 SST0101JP001 SST0101LJ001 SST0101MS017 SST0101MS021
SW 502		TACT SWITCH SKHHAP or TACT SWITCH KSM0614B or TACT SWITCH KPT-1105BM or TACT SWITCH DHT-1102C or TACT SWITCH EVQ PAC 09K or TACT SWITCH EVQ JAC 09K	SST0101AL028 SST0101HH013 SST0101JP001 SST0101LJ001 SST0101MS017 SST0101MS021
SW 504		TACT SWITCH SKHHAP or TACT SWITCH KSM0614B or TACT SWITCH KPT-1105BM or TACT SWITCH DHT-1102C or TACT SWITCH EVQ PAC 09K or TACT SWITCH EVQ JAC 09K	SST0101AL028 SST0101HH013 SST0101JP001 SST0101LJ001 SST0101MS017 SST0101MS021
SW 505		TACT SWITCH SKHHAP or TACT SWITCH KSM0614B or TACT SWITCH KPT-1105BM or TACT SWITCH DHT-1102C or TACT SWITCH EVQ PAC 09K or TACT SWITCH EVQ JAC 09K	SST0101AL028 SST0101HH013 SST0101JP001 SST0101LJ001 SST0101MS017 SST0101MS021
SW 506 SW 507		PUSH SWITCH SPPB61 or PUSH SWITCH JPS1120-0601H	SSP0102AL001 SSP0102SR001
<b>VARIABLE RESISTORS</b>			
VR 301		CARBON P.O.T. 4.7K $\Omega$ B or CARBON P.O.T. 5K $\Omega$ B or CARBON P.O.T. 5K $\Omega$ B or CARBON P.O.T. 5K $\Omega$ B	638A472 VRCB502KA011 138N780 VRCB502HH005
VR 302		CARBON P.O.T. 2.2K $\Omega$ B or CARBON P.O.T. 2K $\Omega$ B or CARBON P.O.T. 2K $\Omega$ B or CARBON P.O.T. 2K $\Omega$ B	638A222 VRCB202KA011 138N778 VRCB202HH005
VR 501		CARBON P.O.T. 100K $\Omega$ B or CARBON P.O.T. 100K $\Omega$ B or CARBON P.O.T. 100K $\Omega$ B or CARBON P.O.T. 100K $\Omega$ B	638A104 VRCB104KA011 138N785 VRCB104HH005
<b>CRYSTAL OSCILLATORS</b>			
X 301		CRYSTAL OSCILLATOR 4.433619MHZ or CRYSTAL OSCILLATOR 4.433619MHZ or CRYSTAL OSCILLATOR 4.433619MHZ	1811388 1811366 FXC445LGM001
X 501		CRYSTAL OSCILLATOR 32KHZ(10PPM) or CRYSTAL OSCILLATOR 32KHZ(10PPM)	1811350 1811351
X 502	C,D	CRYSTAL OSCILLATOR 13.300857MHZ	FXE136LDS001
<b>MISCELLANEOUS</b>			
2B 5		HOLDER, F.I.P.(R)	0VM302619
2B 6		HOLDER, F.I.P.(L)	0VM302618
2B 8		BUSH, LED(B)	6N50114
2B 11		HOLDER, IF SENSOR (2B11 Used only if RS501: NJL51V367)	0VM407020
2B 15		PLATE, GROUND, TUNER	0VM407332
2L 071		SCREW, S-TIGHT M3X5 BIND HEAD+	GBMS3050
A 17		JACK BOARD(BG)	0VM302625
A 19		JACK BOARD(21P)	0VM201920
AC 001 $\Delta$		AC CORD LA-1517-1	WAE0202LW011
F 001 $\Delta$		FUSE T1.60AH250V or FUSE T1.60AH250V	PAGC20BAG162 PBGZ20CDX006
FH 001		FUSE HOLDER FH-V-03078-1 or HOLDER, FUSE CNT41-0014	XH01Z00DK002 1790424

Ref. No.	Mark	Description	Part No.
FH 002		FUSE HOLDER FH-V-03078-1 or HOLDER, FUSE CNT41-0014	XH01Z00DK002 1790424
FL 301 FP 501	C,D	NOISE FILTER ZJSR5101-222TA F.I.P. 10-BT-119G or F.I.P. FIP10BTM6	FAE806TTE001 TVFD1C0FT024 TVFD1C0NE025
JK 751		SKIRT JACK, 21P CSS5021-1701R	JGZL210SR001
JW 01	C,D	WIRE ASSEMBLY 10P	WX1H6302-002
JW 03	C,D	WIRE 050/BRO/AWG26#1007	WX3101A6F405
JW 04	C,D	WIRE 050/BRO/AWG26#1007	WX3101A6F405
MD 701		RF MODULATOR PAL(G) NJH3032G007	URFCPLGJR001
RS 501		REMOTE RECEIVER PIC-12042LFB (Not used 2B11)	USESJRSKK018
RS 501		REMOTE RECEIVER NJL51V367 (Used 2B11)	USESJRSJR009
T 001 $\Delta$ TU 701		PULSE TRANS S1468B TUNER UNIT TELE4-025A RF CABLE LEAD CLAMPER or LEAD CLAMPER GT-80M	LTT00EPSA009 UTUNPLBAL005 WPZ0050LG001 1790356 XF00080HL001

### Function CBA (MCV-B)

Ref. No.	Mark	Description	Part No.
		<b>Function CBA (MCV-B)</b> Consists of the following:	
<b>CONNECTOR</b>			
CN 251		ANGLE SOCKET CONNECTOR, 3P	1770598
<b>RESISTORS</b>			
R 253		CARBON RES. 1/4W J 1.2K $\Omega$ or CARBON RES. 1/6W J 1.2K $\Omega$	RCX4JATZ0122 RCX6JATZ0122
R 254		CARBON RES. 1/4W J 1.5K $\Omega$ or CARBON RES. 1/6W J 1.5K $\Omega$	RCX4JATZ0152 RCX6JATZ0152
R 255		CARBON RES. 1/4W J 2.2K $\Omega$ or CARBON RES. 1/6W J 2.2K $\Omega$	RCX4JATZ0222 RCX6JATZ0222
R 256		CARBON RES. 1/4W J 3.9K $\Omega$ or CARBON RES. 1/6W J 3.9K $\Omega$	RCX4JATZ0392 RCX6JATZ0392
R 257		CARBON RES. 1/4W J 2.2K $\Omega$ or CARBON RES. 1/6W J 2.2K $\Omega$	RCX4JATZ0222 RCX6JATZ0222
R 258		CARBON RES. 1/4W J 3.9K $\Omega$ or CARBON RES. 1/6W J 3.9K $\Omega$	RCX4JATZ0392 RCX6JATZ0392
R 259		CARBON RES. 1/4W J 8.2K $\Omega$ or CARBON RES. 1/6W J 8.2K $\Omega$	RCX4JATZ0822 RCX6JATZ0822
R 260		CARBON RES. 1/4W J 22K $\Omega$ or CARBON RES. 1/6W J 22K $\Omega$	RCX4JATZ0223 RCX6JATZ0223
R 271		CARBON RES. 1/4W J 1.8K $\Omega$ or CARBON RES. 1/6W J 1.8K $\Omega$	RCX4JATZ0182 RCX6JATZ0182
R 292		CARBON RES. 1/4W J 1K $\Omega$ or CARBON RES. 1/6W J 1K $\Omega$	RCX4JATZ0102 RCX6JATZ0102
<b>SWITCHES</b>			
SW 252		TACT SWITCH SKHHAP or TACT SWITCH KSM0614B or TACT SWITCH KPT-1105BM or TACT SWITCH DHT-1102C or TACT SWITCH EVQ PAC 09K or TACT SWITCH EVQ JAC 09K	SST0101AL028 SST0101HH013 SST0101JP001 SST0101LJ001 SST0101MS017 SST0101MS021
SW 253		TACT SWITCH SKHHAP or TACT SWITCH KSM0614B or TACT SWITCH KPT-1105BM or TACT SWITCH DHT-1102C or TACT SWITCH EVQ PAC 09K or TACT SWITCH EVQ JAC 09K	SST0101AL028 SST0101HH013 SST0101JP001 SST0101LJ001 SST0101MS017 SST0101MS021
SW 254		TACT SWITCH SKHHAP or TACT SWITCH KSM0614B or TACT SWITCH KPT-1105BM or TACT SWITCH DHT-1102C or TACT SWITCH EVQ PAC 09K or TACT SWITCH EVQ JAC 09K	SST0101AL028 SST0101HH013 SST0101JP001 SST0101LJ001 SST0101MS017 SST0101MS021

Ref. No.	Mark	Description	Part No.
SW 255		TACT SWITCH SKHHAP or	SST0101AL028
		TACT SWITCH KSM0614B or	SST0101HH013
		TACT SWITCH KPT-1105BM or	SST0101JP001
		TACT SWITCH DHT-1102C or	SST0101LJ001
		TACT SWITCH EVQ PAC 09K or	SST0101MS017
		TACT SWITCH EVQ JAC 09K	SST0101MS021
SW 256		TACT SWITCH SKHHAP or	SST0101AL028
		TACT SWITCH KSM0614B or	SST0101HH013
		TACT SWITCH KPT-1105BM or	SST0101JP001
		TACT SWITCH DHT-1102C or	SST0101LJ001
		TACT SWITCH EVQ PAC 09K or	SST0101MS017
		TACT SWITCH EVQ JAC 09K	SST0101MS021
SW 257		TACT SWITCH SKHHAP or	SST0101AL028
		TACT SWITCH KSM0614B or	SST0101HH013
		TACT SWITCH KPT-1105BM or	SST0101JP001
		TACT SWITCH DHT-1102C or	SST0101LJ001
		TACT SWITCH EVQ PAC 09K or	SST0101MS017
		TACT SWITCH EVQ JAC 09K	SST0101MS021
SW 258		TACT SWITCH SKHHAP or	SST0101AL028
		TACT SWITCH KSM0614B or	SST0101HH013
		TACT SWITCH KPT-1105BM or	SST0101JP001
		TACT SWITCH DHT-1102C or	SST0101LJ001
		TACT SWITCH EVQ PAC 09K or	SST0101MS017
		TACT SWITCH EVQ JAC 09K	SST0101MS021
SW 259		TACT SWITCH SKHHAP or	SST0101AL028
		TACT SWITCH KSM0614B or	SST0101HH013
		TACT SWITCH KPT-1105BM or	SST0101JP001
		TACT SWITCH DHT-1102C or	SST0101LJ001
		TACT SWITCH EVQ PAC 09K or	SST0101MS017
		TACT SWITCH EVQ JAC 09K	SST0101MS021
SW 260		TACT SWITCH SKHHAP or	SST0101AL028
		TACT SWITCH KSM0614B or	SST0101HH013
		TACT SWITCH KPT-1105BM or	SST0101JP001
		TACT SWITCH DHT-1102C or	SST0101LJ001
		TACT SWITCH EVQ PAC 09K or	SST0101MS017
		TACT SWITCH EVQ JAC 09K	SST0101MS021
SW 271		TACT SWITCH SKHHAP or	SST0101AL028
		TACT SWITCH KSM0614B or	SST0101HH013
		TACT SWITCH KPT-1105BM or	SST0101JP001
		TACT SWITCH DHT-1102C or	SST0101LJ001
		TACT SWITCH EVQ PAC 09K or	SST0101MS017
		TACT SWITCH EVQ JAC 09K	SST0101MS021

## IF CBA (IFV)

Ref. No.	Mark	Description	Part No.
	A,B	IF CBA (IFV)	0VSA07729
	C,D	IF CBA (IFV)	0VSA07788
		Consists of the following:	
		<b>CAPACITORS</b>	
C 02		CHIP CERAMIC CAP. CK C 1pF/50V	CHE1JC8CK1R0
C 03		CHIP CERAMIC CAP. CK C 1pF/50V	CHE1JC8CK1R0
C 07		CHIP CERAMIC CAP. B K 2200pF/50V or 0.0022μF/50V	CHE1JK80B222 12B3222C
C 09		CHIP CERAMIC CAP. CK C 1pF/50V	CHE1JC8CK1R0
C 10		CHIP CERAMIC CAP. CJ C 3pF/50V	CHE1JC8CJ3R0
C 11		CHIP CERAMIC CAP. B K 0.022μF/50V or 0.022μF/50V	CHE1JK80B223 12B3223C
C 12		CHIP CERAMIC CAP. CH J 100pF/50V or CHIP CERAMIC CAP. CH J 100pF/50V	CHE1JJ8CH101 12CH101C
C 13		CHIP CERAMIC CAP. F Z 0.01μF/50V or	CHE1JZ80F103

Ref. No.	Mark	Description	Part No.
C 14		CHIP CERAMIC CAP. F Z 0.01μF/50V	12F3103C
		CHIP CERAMIC CAP. SL J 330pF/50V or	CHE1JJ8SL331
C 15		CHIP CERAMIC CAP. SL J 330pF/50V	1270331C
		CHIP CERAMIC CAP. B K 2200pF/50V or	CHE1JK80B222
		CHIP CERAMIC CAP. B K 0.0022μF/50V	12B3222C
C 16		CHIP CERAMIC CAP. B K 2200pF/50V or	CHE1JK80B222
		CHIP CERAMIC CAP. B K 0.0022μF/50V	12B3222C
C 17		CHIP CERAMIC CAP. CH J 18pF/50V or	CHE1JJ8CH180
		CHIP CERAMIC CAP. CH J 18pF/50V	12CH180C
C 18		CHIP CERAMIC CAP. F Z 0.01μF/50V or	CHE1JZ80F103
		CHIP CERAMIC CAP. F Z 0.01μF/50V	12F3103C
C 19		CHIP CERAMIC CAP. CH J 47pF/50V or	CHE1JJ8CH470
		CHIP CERAMIC CAP. CH J 47pF/50V	12CH470C
C 20		CHIP CERAMIC CAP. PH J 36pF/50V	CHE1JJ3PH360
C 21		CHIP CERAMIC CAP. F Z 0.047μF/50V or	CHE1JZ80F473
		CHIP CERAMIC CAP. F Z 0.047μF/50V	12F3473C
C 22		CHIP CERAMIC CAP. B K 2200pF/50V or	CHE1JK80B222
		CHIP CERAMIC CAP. B K 0.0022μF/50V	12B3222C
C 23		CHIP CERAMIC CAP. CH J 24pF/50V or	CHE1JJ8CH240
		CHIP CERAMIC CAP. CH J 24pF/50V	12CH240C
C 24		CHIP CERAMIC CAP. CH J 15pF/50V or	CHE1JJ8CH150
		CHIP CERAMIC CAP. CH J 15pF/50V	12CH150C
C 25		CHIP CERAMIC CAP. CH J 15pF/50V or	CHE1JJ8CH150
		CHIP CERAMIC CAP. CH J 15pF/50V	12CH150C
C 30		CHIP CERAMIC CAP. CH J 47pF/50V or	CHE1JJ8CH470
		CHIP CERAMIC CAP. CH J 47pF/50V	12CH470C
C 31		CHIP CERAMIC CAP. F Z 0.01μF/50V or	CHE1JZ80F103
		CHIP CERAMIC CAP. F Z 0.01μF/50V	12F3103C
C 51		ELECTROLYTIC CAP. 0.47μF/50V M H7	CE1JMAVSLR47
C 52		ELECTROLYTIC CAP. 2.2μF/50V M H7	CE1JMAVSLR2
C 53		ELECTROLYTIC CAP. 47μF/16V M H7	CE1CMAVSL470
C 55		ELECTROLYTIC CAP. 0.47μF/50V M H7	CE1JMAVSLR47

## CONNECTOR

CN 01		SHUNT CONNECTOR, 8P	JC92K08ER001
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## IC

IC 01		IC LA7578N	QSBLA0SSY057
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## COILS

L 02		INDUCTOR 15μH-K-26T or	LLAXKDTKA150
		INDUCTOR 15μH-K-26T	LLAXKATTU150
L 04		INDUCTOR 10μH-K-26T or	LLAXKDTKA100
		INDUCTOR 10μH-K-26T	LLAXKATTU100
L 05		INDUCTOR 39μH-K-26T or	LLAXKDTKA390
		INDUCTOR 39μH-K-26T	LLAXKATTU390
T 02		COIL 2259-JPS-398	LFA05V0SF007
T 03		COIL 2259-JPS-400	LFA05V0SF009
T 04		COIL 2259-JPS-394	LFA05V0SF003
T 05		COIL 2259-JPS-397	LFA05V0SF006
T 06		COIL 2259-JPS-397	LFA05V0SF006

## TRANSISTOR

Q 01		TRANSISTOR KTA1266(Y) or	NQSY0KTA1266
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Ref. No.	Mark	Description	Part No.
		TRANSISTOR KTA1266(GR) or TRANSISTOR 2SA1317(S) or TRANSISTOR 2SA1317(T)	NQS40KTA1266 A1317SZ A1317TZ
<b>RESISTORS</b>			
R 01		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C
R 02		CHIP RES. 1/10W J 150 $\Omega$ or CHIP RES. 1/10W J 150 $\Omega$	RRXAJR6Z0151 134F151C
R 03		CHIP RES. 1/10W J 270 $\Omega$ or CHIP RES. 1/10W J 270 $\Omega$	RRXAJR6Z0271 134F271C
R 10		CHIP RES. 1/10W J 3.3K $\Omega$ or CHIP RES. 1/10W J 3.3K $\Omega$	RRXAJR6Z0332 134F332C
R 11		CHIP RES. 1/10W J 6.8K $\Omega$ or CHIP RES. 1/10W J 6.8K $\Omega$	RRXAJR6Z0682 134F682C
R 12		CHIP RES. 1/10W J 2.7K $\Omega$ or CHIP RES. 1/10W J 2.7K $\Omega$	RRXAJR6Z0272 134F272C
R 13		CHIP RES. 1/10W J 1.8K $\Omega$ or CHIP RES. 1/10W J 1.8K $\Omega$	RRXAJR6Z0182 134F182C
R 14		CHIP RES. 1/10W J 1.5K $\Omega$ or CHIP RES. 1/10W J 1.5K $\Omega$	RRXAJR6Z0152 134F152C
R 15		CHIP RES. 1/10W J 1.2K $\Omega$ or CHIP RES. 1/10W J 1.2K $\Omega$	RRXAJR6Z0122 134F122C
R 16		CHIP RES. 1/10W J 56K $\Omega$ or CHIP RES. 1/10W J 56K $\Omega$	RRXAJR6Z0563 134F563C
R 17		CHIP RES. 1/10W J 6.8K $\Omega$ or CHIP RES. 1/10W J 6.8K $\Omega$	RRXAJR6Z0682 134F682C
R 18		CHIP RES. 1/10W J 2.7K $\Omega$ or CHIP RES. 1/10W J 2.7K $\Omega$	RRXAJR6Z0272 134F272C
R 19		CHIP RES. 1/10W J 820K $\Omega$ or CHIP RES. 1/10W J 820K $\Omega$	RRXAJR6Z0824 134F824C
R 21		CHIP RES. 1/10W J 150K $\Omega$ or CHIP RES. 1/10W J 150K $\Omega$	RRXAJR6Z0154 134F154C
R 22		CHIP RES. 1/10W J 120K $\Omega$ or CHIP RES. 1/10W J 120K $\Omega$	RRXAJR6Z0124 134F124C
R 23		CHIP RES. 1/10W J 120K $\Omega$ or CHIP RES. 1/10W J 120K $\Omega$	RRXAJR6Z0124 134F124C
R 24		CHIP RES. 1/10W J 82K $\Omega$ or CHIP RES. 1/10W J 82K $\Omega$	RRXAJR6Z0823 134F823C
R 27		CHIP RES. 1/10W J 1.5K $\Omega$ or CHIP RES. 1/10W J 1.5K $\Omega$	RRXAJR6Z0152 134F152C
R 28		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C
R 29		CHIP RES. 1/10W J 360 $\Omega$ or CHIP RES. 1/10W J 360 $\Omega$	RRXAJR6Z0361 134F361C
R 30		CHIP RES. 1/10W J 150 $\Omega$ or CHIP RES. 1/10W J 150 $\Omega$	RRXAJR6Z0151 134F151C
R 32		CHIP RES. 1/10W J 3.3K $\Omega$ or CHIP RES. 1/10W J 3.3K $\Omega$	RRXAJR6Z0332 134F332C
R 34		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C
R 35		CHIP RES. 1/10W J 2.7K $\Omega$ or CHIP RES. 1/10W J 2.7K $\Omega$	RRXAJR6Z0272 134F272C
R 36		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C
R 37		CHIP RES. 1/10W J 390 $\Omega$ or CHIP RES. 1/10W J 390 $\Omega$	RRXAJR6Z0391 134F391C
R 38		CHIP RES. 1/10W J 68 $\Omega$ or CHIP RES. 1/10W J 68 $\Omega$	RRXAJR6Z0680 134F680C
R 40		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C
R 42		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C
R 43		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C
R 44		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C

Ref. No.	Mark	Description	Part No.
R 45		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C
R 46		CHIP RES. 1/10W 0 $\Omega$ or CHIP RES. 1/10W J 0 $\Omega$	RRXAZR6Z0000 134F000C
<b>VARIABLE RESISTOR</b>			
VR 01		CARBON P.O.T. 10K $\Omega$ B or CARBON P.O.T. 10K $\Omega$ B or CARBON P.O.T. 10K $\Omega$ B	138A959 VRCB103KA012 VRCB103HH002
<b>MISCELLANEOUS</b>			
2B 16		SHIELD, TOP(IF)	0VM302616
2B 17		SHIELD, BOTTOM(IF)	0VM302617
F 01		SURFACE ACOUSTIC WAVE FILTER F1044QS	FBB386PTS003
F 03		CERAMIC TRAP 5.5MHZ/5.74MHZ	FBE575PMS004
F 04		CERAMIC FILTER 5.5MHZ LABEL, IF	FBB555PMR004 0VM407532

## CSV CBA (13A-509 and 13A-529 Models only)

Ref. No.	Mark	Description	Part No.
	C,D	CSV CBA Consists of the following:	0VSA07882
<b>CAPACITORS</b>			
C 201		CERAMIC CAP.(AX) SL J 33pF/50V or CERAMIC CAP. SL J 33pF/50V	CCA1JUTSL330 3S41330T
C 202		CERAMIC CAP.(AX) X K 2200pF/16V or CERAMIC CAP. X K 0.0022 $\mu$ F/16V	CDA1CKT0X222 3X4C222T
C 203		CERAMIC CAP.(AX) SL J 15pF/50V or CERAMIC CAP. SL J 15pF/50V	CCA1JUTSL150 3S41150T
C 204		CERAMIC CAP.(AX) X K 2200pF/16V or CERAMIC CAP. X K 0.0022 $\mu$ F/16V	CDA1CKT0X222 3X4C222T
C 205		CERAMIC CAP.(AX) X K 2200pF/16V or CERAMIC CAP. X K 0.0022 $\mu$ F/16V	CDA1CKT0X222 3X4C222T
C 206		CERAMIC CAP.(AX) SL J 68pF/50V or CERAMIC CAP. SL J 68pF/50V	CCA1JUTSL680 3S41680T
C 207		CERAMIC CAP.(AX) X K 2200pF/16V or CERAMIC CAP. X K 0.0022 $\mu$ F/16V	CDA1CKT0X222 3X4C222T
C 208		CERAMIC CAP.(AX) Y M 0.01 $\mu$ F/16V	CDA1CMT0Y103
C 209		CERAMIC CAP.(AX) B J 1000pF/50V or CERAMIC CAP.(AX) B K 1000pF/50V or CERAMIC CAP. B J 0.001 $\mu$ F/50V or CERAMIC CAP. B K 0.001 $\mu$ F/50V	CDA1JUT0B102 CDA1JKT0B102 3B41102T 3B42102T
<b>CONNECTORS</b>			
CN 201		ANGLE PIN HEADER, 10P	1740783
CN 202		PIN HEADER, ANGLE, 3P	5700289
CN 203		PIN HEADER, ANGLE, 3P	5700289
<b>DIODE</b>			
D 201		SWITCHING DIODE 1N4148M or SWITCHING DIODE 1N4148M or SWITCHING DIODE GMB01-BT	NDT01N4148M QDT01N4148M GMB01BT
<b>COILS</b>			
L 201		INDUCTOR 68 $\mu$ H-K	LLAXKCPFG680
L 202		INDUCTOR 15 $\mu$ H-K	LLAXKCPFG150
<b>TRANSISTORS</b>			
Q 201		RES. BUILT-IN TRANSISTOR KRA109M or RES. BUILT-IN TRANSISTOR KSR2208 or RES. BUILT-IN TRANSISTOR 2SA1347	NQSZ0KRA109M NQSZ0KSR2208 QQSZ02SA1347
Q 202		TRANSISTOR KTA1267(Y) or	NQSY0KTA1267



Ref. No.	Mark	Description	Part No.
Q 203		TRANSISTOR KTA1267(GR) or	NQS10KTA1267
		TRANSISTOR KSA1175(Y) or	NQSY0KSA1175
		TRANSISTOR KSA1175(G) or	NQSG0KSA1175
		TRANSISTOR 2SA608SP(E) or	A608SEZ
		TRANSISTOR 2SA608SP(F)	A608SFZ
Q 204		TRANSISTOR KTC3199(Y) or	NQSY0KTC3199
		TRANSISTOR KTC3199(GR) or	NQS10KTC3199
		TRANSISTOR KSC2785(Y) or	NQSY0KSC2785
		TRANSISTOR KSC2785(G) or	NQSG0KSC2785
		TRANSISTOR 2SC536SP(E) or	C536SEZ
Q 205		TRANSISTOR 2SC536SP(F)	C536SFZ
		TRANSISTOR KTA1267(Y) or	NQSY0KTA1267
		TRANSISTOR KTA1267(GR) or	NQS10KTA1267
		TRANSISTOR KSA1175(Y) or	NQSY0KSA1175
		TRANSISTOR KSA1175(G) or	NQSG0KSA1175
		TRANSISTOR 2SA608SP(E) or	A608SEZ
		TRANSISTOR 2SA608SP(F)	A608SFZ
		TRANSISTOR KTC3193(Y) or	NQSY0KTC3193
		TRANSISTOR 2SC2839(E) or	C2839EZ
		TRANSISTOR 2SC2839(F)	C2839FZ
RESISTORS			
R 201		CARBON RES. 1/4W J 1.2K $\Omega$ or	RCX4JATZ0122
R 202		CARBON RES. 1/6W J 1.2K $\Omega$	RCX6JATZ0122
R 203		CARBON RES. 1/4W J 680 $\Omega$ or	RCX4JATZ0681
		CARBON RES. 1/6W J 680 $\Omega$	RCX6JATZ0681
R 204		CARBON RES. 1/4W J 1K $\Omega$ or	RCX4JATZ0102
		CARBON RES. 1/6W J 1K $\Omega$	RCX6JATZ0102
R 205		CARBON RES. 1/4W J 2.2K $\Omega$ or	RCX4JATZ0222
		CARBON RES. 1/6W J 2.2K $\Omega$	RCX6JATZ0222
R 206		CARBON RES. 1/4W J 1K $\Omega$ or	RCX4JATZ0102
		CARBON RES. 1/6W J 1K $\Omega$	RCX6JATZ0102
R 207		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 208		CARBON RES. 1/4W J 22K $\Omega$ or	RCX4JATZ0223
		CARBON RES. 1/6W J 22K $\Omega$	RCX6JATZ0223
R 209		CARBON RES. 1/4W J 1.2K $\Omega$ or	RCX4JATZ0122
		CARBON RES. 1/6W J 1.2K $\Omega$	RCX6JATZ0122
R 210		CARBON RES. 1/4W J 100 $\Omega$ or	RCX4JATZ0101
		CARBON RES. 1/6W J 100 $\Omega$	RCX6JATZ0101
R 211		CARBON RES. 1/4W J 1.5K $\Omega$ or	RCX4JATZ0152
		CARBON RES. 1/6W J 1.5K $\Omega$	RCX6JATZ0152
		CARBON RES. 1/4W J 8.2K $\Omega$ or	RCX4JATZ0822
		CARBON RES. 1/6W J 8.2K $\Omega$	RCX6JATZ0822

# Note:

IC5101 CAN BE EITHER  
SAA4700(CBA NO.: BK8036F01A01) or  
SDA5642(CBA NO.: BS4250F01001).  
(Refer to 1-8-39~1-8-40)

# Type: IC5101(SAA4700) VPS CBA (CBA NO.: BK8036F01A01)

Ref. No.	Mark	Description	Part No.
	B,D	VPS CBA Consists of the following:	0VSA07210
<b>CAPACITORS</b>			
C 5101		CERAMIC CAP.(AX) B J 1000pF/50V or	CDA1JJT0B102
		CERAMIC CAP.(AX) B K 1000pF/50V or	CDA1JKT0B102


Ref. No.	Mark	Description	Part No.
C 5102		CERAMIC CAP. B J 0.001 $\mu$ F/50V or CERAMIC CAP. B K 0.001 $\mu$ F/50V CERAMIC CAP.(AX) X K 4700pF/16V or	3B41102T 3B42102T CDA1CKT0X472
C 5103		CERAMIC CAP. X K 0.0047 $\mu$ F/16V CERAMIC CAP.(AX) B J 470pF/50V or CERAMIC CAP.(AX) B K 470pF/50V or	3X4C472T CCA1JJT0B471 CCA1JKT0B471
C 5104		CERAMIC CAP. B J 470pF/50V or CERAMIC CAP. B K 470pF/50V SEMICONDUCTOR CAP. SR K 0.1 $\mu$ F/25V or SEMICONDUCTOR CAP. SR K 0.1 $\mu$ F/25V	3B41471T 3B42471T CDA1EKS0X104 12Y2104S
C 5106		MYLAR CAP. 0.022 $\mu$ F/50V J or MYLAR CAP. 0.022 $\mu$ F/50V J	CMA1JJS00223 2254223S
C 5108		MYLAR CAP. 0.0047 $\mu$ F/50V J or MYLAR CAP. 0.0047 $\mu$ F/50V J	CMA1JJS00472 2254472S
CONNECTOR			
CN5101		ANGLE SOCKET CONNECTOR, 9P	1770645
IC			
IC5101		IC, VPS SAA4700	14D0738
RESISTORS			
R 5101		CARBON RES. 1/4W J 4.7k $\Omega$ or CARBON RES. 1/6W J 4.7k $\Omega$	RCX4JATZ0472 RCX6JATZ0472
R 5104		CARBON RES. 1/4W J 75k $\Omega$ or CARBON RES. 1/6W J 75k $\Omega$	RCX4JATZ0753 RCX6JATZ0753
R 5105		CARBON RES. 1/4W J 8.2k $\Omega$ or CARBON RES. 1/6W J 8.2k $\Omega$	RCX4JATZ0822 RCX6JATZ0822
R 5111		CARBON RES. 1/4W J 1k $\Omega$ or CARBON RES. 1/6W J 1k $\Omega$	RCX4JATZ0102 RCX6JATZ0102

# Type: IC5101 (SDA5642) VPS CBA (CBA NO.: BS4250F01001)

Ref. No.	Mark	Description	Part No.
	B,D	VPS CBA Consists of the following:	0VSA07212
CAPACITORS			
C 5101		CERAMIC CAP.(AX) B J 150pF/50V or CERAMIC CAP.(AX) B K 150pF/50V or CERAMIC CAP. B J 150pF/50V or CERAMIC CAP. B K 150pF/50V	CCA1JJT0B151 CCA1JKT0B151 3B41151T 3B42151T
C 5102		SEMICONDUCTOR CAP. SR K 0.033μF/25V or SEMICONDUCTOR CAP. SR K 0.033μF/25V	CDA1EKS0X333 12Y2333S
C 5103		SEMICONDUCTOR CAP. SR K 0.1μF/25V or SEMICONDUCTOR CAP. SR K 0.1μF/25V	CDA1EKS0X104 12Y2104S
CONNECTOR			
CN5101		ANGLE SOCKET CONNECTOR, 9P	1770645
IC			
IC5101		IC, VPS SDA5642	14D0739
RESISTORS			
R 5101		CARBON RES. 1/4W J 2.2k Ω or CARBON RES. 1/6W J 2.2k Ω	RCX4JATZ0222 RCX6JATZ0222
R 5102		CARBON RES. 1/4W J 1M Ω or CARBON RES. 1/6W J 1M Ω	RCX4JATZ0105 RCX6JATZ0105
R 5103		CARBON RES. 1/4W J 100k Ω or CARBON RES. 1/6W J 100k Ω	RCX4JATZ0104 RCX6JATZ0104
R 5104		CARBON RES. 1/4W J 820k Ω or	RCX4JATZ0824

Ref. No.	Mark	Description	Part No.
R 5105		CARBON RES. 1/6W J 820k $\Omega$	RCX6JATZ0824
		CARBON RES. 1/4W J 5.1k $\Omega$ or	RCX4JATZ0512
R 5107		CARBON RES. 1/6W J 5.1k $\Omega$	RCX6JATZ0512
		CARBON RES. 1/4W J 100 $\Omega$ or	RCX4JATZ0101
R 5110		CARBON RES. 1/6W J 100 $\Omega$	RCX6JATZ0101
		CARBON RES. 1/4W J 820k $\Omega$ or	RCX4JATZ0824
D 5101		CARBON RES. 1/6W J 820k $\Omega$	RCX6JATZ0824
		CARBON RES. 1/4W J 1k $\Omega$ or	RCX4JATZ0102
		CARBON RES. 1/6W J 1k $\Omega$	RCX6JATZ0102

# DECK MECHANICAL PARTS LIST

**PRODUCT SAFETY NOTE:** Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

**Comparison Chart of Models and Marks**

MODEL	MARK
13A-109/13A-129	A
13A-509/13A-529	B

Ref. No.	Mark	Description	Part No.
B 1	A	CHASSIS ASSEMBLY REEL SENSOR PRISM	OVSA07743
B 1	B	CHASSIS ASSEMBLY MK4	OVSA06769
B 2	A	CYLINDER ASSEMBLY(PPS) PAL 4HD 2SP	N5108CYL
B 2	B	CYLINDER ASSEMBLY(ADC) PAL 4HD	N5147CYL
B 4		MOTOR HOLDER CALKING ASSEMBLY MK5	OVSA07421
B 5		CASSETTE DRIVE LEVER ASSEMBLY MK4	OVSA06819
B 6		PINCH ROLLER ARM ASSEMBLY U6	OVSA05848
B 7		PINCH ARM ASSEMBLY FUNAI	OVSA05924
B 8		PULLEY ASSEMBLY U6 MK2	OVSA05505
B 9	A	MOVING GUIDE S ASSEMBLY MK4 PLASTIC	OVSA06934
B 9	B	MOVING GUIDE S ASSEMBLY MK4	OVSA06814
B 10	A	MOVING GUIDE T ASSEMBLY MK4 PLASTIC	OVSA06935
B 10	B	MOVING GUIDE T ASSEMBLY MK4	OVSA06815
B 11		LOADING ARM T ASSEMBLY U6 MK2	OVSA05503
B 12		LOADING ARM B ASSEMBLY	OVSA04215
B 13		LOADING ARM M ASSEMBLY or	OVM404693
B 14		LOADING ARM M ASSEMBLY MK3	OVSA07350
B 15		PINCH ROLLER SPRING(U5)	OVM403949C
B 21		LUMIRROR WASHER 3.1X6X0.35	OVM403269
B 22		LOADING BELT U5 or	OVM403432
B 27		LOADING BELT U6MK2	OVM403952
B 28		P.S.W(CUT)	OVM404679
B 29		BAND BRAKE ASSEMBLY	OVSA04658
B 30		MAIN BRAKE S ASSEMBLY	OVSA04212
B 31		MAIN BRAKE T ASSEMBLY	OVSA04213
B 32		T BRAKE ARM ASSEMBLY	OVSA04641
B 33		AC HEAD ASSEMBLY MK4 R/P	OVSA06766
B 34		REEL BASE ASSEMBLY U5	OVSA04759
B 35		TAPE GUIDE ASSEMBLY	OVM402560
B 36		TENSION LEVER SPRING ASSEMBLY	OVSA04550
B 37		CAPSTAN MOTOR F2QKB92 or VA CAPSTAN MOTOR(SANKYO) F2QQT811	MMDBB5ZSJ002 MMDZB05SJ001
B 38		MODE CHANGE LEVER MK3 JOGSHUTTLE MK3	OVM100511K
B 39		M BRAKE(S) SPRING	OVM402579A
B 40		M BRAKE(S)LEVER	OVM300753F
B 41		S BRAKE ARM U6/U7	OVM301759
B 42		M BRAKE T ARM SPRING	OVM402582C
B 43		T BRAKE SPRING(2) MK3 JOG	OVM405798
B 44		M LEVER SPRING(3)	OVM406664
B 45		TAPE GUIDE ARM SPRING	OVM402581
B 46		TAPE GUIDE ARM ADJUST SCREW	OVM403242
B 47		BT DRIVE ARM	OVM300756K


Ref. No.	Mark	Description	Part No.
B 51		CHANGE ARM 16030500 or	OVM402441G
B 52		CHANGE ARM A	OVM405857
B 53		CAPSTAN BELT or	OVM402397A
B 54		CAPSTAN BELT	OVM403950B
B 55		P.S.W B	OVM402625
B 56		GROUND BRUSH ASSEMBLY U5 or	OVM404524
B 57		GROUND BRUSH ASSEMBLY U5	OVM404827
B 58		LUMINESCENCE PRISM(B) U6/U7	OVM301764H
B 59		REC ARM SPRING	OVM402578A
B 60		M LEVER HOLDER U6/U7	OVM301717E
B 61		RACK SPRING B	OVM403894A
B 62	B	F BRAKE ASSEMBLY U9 4HEAD	OVSA06333
B 63	B	F BRAKE SP(3) F=60	OVM406233
B 64		REC ARM A	OVM301441J
B 65		REC ARM B	OVM301442I
B 66		REC SPRING	OVM403724
B 67		P.S.W F	OVM402629
B 68		WORM	OVM402429E
B 69		P.S.W C	OVM402626
B 70		P.S.W (WORM THRUST) 02130250	OVM403348
B 71		PULLEY U6/U7	OVM301718D
B 72		PULLEY FELT	OVM404952
B 73		KICK ARM HOLDER U6/U7	OVM301716
B 74		PRESS FIT BUSH	OVM403652A
B 75		KICK ARM U6/U7	OVM404382F
B 76		KICK ARM SPRING U6/U7	OVM404424D
B 77		CLUTCH ASSEMBLY U6 MK2	OVSA05509
B 78		ARM IDLER ASSEMBLY U9 4HEAD	OVSA06334
B 79		PULLEY SUB ASSEMBLY U6/U7	OVSA05998
B 80		SHAFT LOCK ASSEMBLY	OVSA04642
B 81		CLUTCH WASHER MK2	OVM404428
B 82		MAIN LEVER ASSEMBLY U9 4HEAD	OVSA06331
B 83		SPRING SUPPORTER	OVM405084A
B 84		STOPPER BOSS	OVM405188
B 85		TG CAP MK4	OVM406153A
B 86		TG CAP(2) MK4	OVM406389B
B 87		FL ASSEMBLY MK4	OVD0M06962
B 88		RACK MK3	OVM201456B
B 89		F DOOR OPENER(2) or	OVM302218A
B 90		F DOOR OPENER(3)	OVM302351B
B 91		DOOR OPENER MK3	OVM302019B
B 92		F DOOR OPENER R SPRING MK3	OVM405214E
B 93		SLIDER SHAFT MK3	OVM405222D
B 94		DOOR OPENER SPRING MK3	OVM405302D
B 95		CASSETTE DRIVE GEAR R SPRING MK4	OVM406253
B 96		DOOR LOCK RELEASE ARM SPRING	OVM402508C
B 97		DOOR LOCK RELEASE ARM(3) MK3	OVM405034D
B 98		CASSETTE SPRING STOPPER or	OVM402507I

Ref. No.	Mark	Description	Part No.
B 326	A	CASSETTE SPRING STOPPER	0VM402507I
		DRIVE ARM SPRING JOG SHUTTLE MK3	0VM405172C
B 326	B	DRIVE ARM SP JOG SHUTTLE MK3	0VM405172B
B 327		BUSH CLUTCH(2) JOG MK3	0VM405368
B 328		REEL DRIVE ARM JOG SHUTTLE MK3	0VM301978E
B 329		HOLDER KICK ARM JOG SHUTTLE MK3 or	0VM301979D
		HOLDER KICK ARM(2) JOG SHUTTLE MK3	0VM302219B
B 330		DRIVE ARM SHAFT JOG SHUTTLE MK3	0VM405170
B 331		DRIVE ARM ROLLER JOG SHUTTLE MK3	0VM405171
B 332		HOLDER ARM SPRING JOG SHUTTLE MK3	0VM405174C
B 333	B	GUIDE F BRAKE MK3	0VM301982E
B 334		P.S.W 1.7X3.2X0.5T	0VM403678
B 338		P.S.W CUT MK3(3.1X6X0.25)	0VM405809
B 339		REEL BASE ASSEMBLY U9 4HEAD	0VSA06332
B 344		CASSETTE GUIDE R MK4	0VM000074G
B 345		CASSETTE GUIDE L MK4	0VM100544E
B 346		FRONT GUIDE MK4	0VM201618A
B 347		DECKANGLE F MK4	0VM302263D
B 348		DECKANGLE B MK4	0VM302264D
B 349		MIRROR HOLDER L MK4	0VM302265D
B 350		SLIDER GEAR MK4	0VM406109A
B 351		MIRROR(3)	0VM406638
B 352		CASSETTE DRIVE GEAR MK4	0VM302260E
B 353		CASSETTE PLATE MK4	0VM302261D
B 354		SLIDER R MK4	0VM201616B
B 355		SLIDER L MK4	0VM201617D
B 356		LOCK LEVER MK4	0VM302262F
B 357		LOCK LEVER SPRING MK4	0VM406152
B 358		CAM	0VM100543A
B 359		CLEAN LEVER MK4	0VM302259H
B 360		CLEAN ROLLER MK4	0VM406123
B 361		CLEAN BEARING MK4	0VM406124
B 362		MIRROR HOLDER R MK4	0VM302365B
B 363		GEAR SUPPORTER MK4	0VM406240
B 366		PRISM	0VM406950
B 367		PRISM COVER	0VM406951
B 369		CLUTCH SHAFT CAP	0VM406892
L1011		SCREW, C-TIGHT M3X9 PAN HEAD+	GPMS3090
L1051		SCREW, S-TIGHT M2.6X6 PAN HEAD+ or	GPMS9060
		SCREW(CAPSTAN) M2.6X6 S-TIGHT	0VM405901
L1053		SCREW, S-TIGHT M2.6X6 PAN HEAD+ or	GPMS9060
		SCREW(CAPSTAN) M2.6X6 S-TIGHT	0VM405901
L1061		SCREW, S-TIGHT M2.6X4 PAN HEAD+	GPMS9040
L1062		SCREW, S-TIGHT M2.6X8 PAN HEAD+	GPMS9080
L1081		SCREW, S-TIGHT 3X6 BIND HEAD+	GBMS3060
L1091		SCREW, S-TIGHT M3X6 CUP HEAD+	GCMS3060
L1101		SCREW, P-TIGHT 3X8 BIND +	GBMP3080
L1103		SCREW, P-TIGHT 3X8 BIND +	GBMP3080
L1111		SCREW, P-TIGHT 3X8 WASHER +	GCMP3080
L1112		SCREW, P-TIGHT 3X8 WASHER +	GCMP3080
L1113		SCREW, P-TIGHT 3X8 WASHER +	GCMP3080
L1114	B	SCREW, P-TIGHT 3X8 WASHER +	GCMP3080

Ref. No.	Mark	Description	Part No.
L1115		SCREW, P-TIGHT 3X8 WASHER +	GCMP3080
L1151		SCREW, SEMS M3X4 PAN HEAD +	CPM33040
L1191		SCREW, P-TIGHT M2.6X12	GCMP9120
L1221		SCREW, SPECIAL	0VM403688
L1231		SPACER SCREW ASSEMBLY	0VM403752
L1241		P-TITE SCREW M2X6	GBMP2060
L1251	B	CS RING(D=5)	WTM5063
L1291		SCREW, P-TIGHT M2.6X6 PAN HEAD+	GPMP9060
L1311		SCREW, B-TIGHT M3X18 PAN HEAD+	GPMB3180
L1321		SCREW, S-TIGHT M3X5 BIND HEAD+	GBMS3050
L1331		SCREW, P-TIGHT M2.6X12	GCMP9120
L1341		SCREW, P-TIGHT M2.6X8 BIND +	GBMP9080
L1342		SCREW, P-TIGHT M2.6X8 BIND +	GBMP9080
L1351		SCREW, SEMS M2.6X6	0VM406255A
2L051	B	SCREW, S-TIGHT M3X5 BIND HEAD+	GBMS3050



# DECK ELECTRICAL PARTS LIST

**PRODUCT SAFETY NOTE:** Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

**NOTE:** Parts that not assigned part numbers (-----) are not available.

Tolerance of Capacitors and Resistors are noted with the following symbols.

C.....±0.25%	D.....±0.5%	F.....±1%
G.....±2%	J.....±5%	K.....±10%
M.....±20%	N.....±30%	Z.....+80/-20%

## Comparison Chart of Models and Marks

MODEL	MARK
13A-109/13A-202	A
13A-509/13A-529	B

## JNT CBA

Ref. No.	Mark	Description	Part No.
		JNT CBA (Joint+Mode SW+ACE Head+Motor) Consists of the following:	0VSA07380
		Joint CBA (JNT-A)	_____
		Mode SW CBA (JNT-B)	_____
		ACE Head CBA (JNT-C)	_____
		Motor CBA (JNT-D)	_____

## Joint CBA (JNT-A)

Ref. No.	Mark	Description	Part No.
		Joint CBA (JNT-A) Consists of the following:	_____
<b>CONNECTORS</b>			
CN2691		ANGLE SOCKET CONNECTOR, 20P	1770615
CN2692		FFC CONNECTOR BASE, TOP 9P or FFC CONNECTOR BASE, TOP 9P or FFC CONNECTOR BASE, TOP 9P or FFC CONNECTOR BASE, TOP 9P or FFC CONNECTOR BASE, TOP 9P	JC2SJ09ERH0C 1700915 1700449 1700515 1700986
<b>RESISTORS</b>			
R 2691		CARBON RES. 1/4W J 27K Ω or CARBON RES. 1/6W J 27K Ω	RCX4JATZ0273 RCX6JATZ0273
R 2692		CARBON RES. 1/4W J 27K Ω or CARBON RES. 1/6W J 27K Ω	RCX4JATZ0273 RCX6JATZ0273
<b>MISCELLANEOUS</b>			
CL2691		JUMPER WIRE, 5P AWG26#20080/P2.0/50	WX1K7010-003
CL2692		JUMPER WIRE, 6P AWG26#20080/P2.0/90	WX1N5007-001
CL2693		JUMPER WIRE, 3P AWG26#2651/P2.0/80 FFC CABLE, 9P FFC/P1.25/120	WX1H5100-001 WX3909QZ4413

## Mode SW CBA (JNT-B)

Ref. No.	Mark	Description	Part No.
		MODE SW CBA (JNT-B) Consists of the following:	_____
SW2691		MODE SWITCH HMW0420-810010	SSR0104HD002

## ACE Head CBA (JNT-B)

Ref. No.	Mark	Description	Part No.
		ACE HEAD CBA (MCV-C) Consists of the following:	_____
CN2693		FLAT CABLE CONNECTOR 6P or FLAT CABLE CONNECTOR 6P	JEHB06JE001 JC88J06NB001

## Motor CBA (JNT-D)

Ref. No.	Mark	Description	Part No.
		MOTOR CBA (JNT-D) Consists of the following:	_____
B 3		LOADING MOTOR PREPARATION MK5 MOTOR PULLEY U5 LOADING MOTOR RF-370CA-15370 or LOADING MOTOR(M) MXN-13FB06A2	0VSA07425 0VM403205A MMDZB12MF001 MMDZB06MS001

## PRV CBA

Ref. No.	Mark	Description	Part No.
	A	PRV CBA (Head Amp + FE Head)	0VSA07381
	B	PRV CBA (Head Amp + FE Head)	0VSA07384
		Consists of the following:	_____
		Head Amp CBA (PRV-A)	_____
		FE Head CBA (PRV-B)	_____
		FE Head CBA (PRV-C)	_____

## Head Amp CBA (PRV-A)

Ref. No.	Mark	Description	Part No.
		Head Amp CBA (PRV-A) Consists of the following:	_____
<b>CAPACITORS</b>			
C 3801	A	CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 3801	B	CERAMIC CAP.(AX) B J 1000pF/50V or CERAMIC CAP.(AX) B K 1000pF/50V or CERAMIC CAP. B J 0.001μF/50V or CERAMIC CAP. B K 0.001μF/50V	CDA1JJT0B102 CDA1JKT0B102 3B41102T 3B42102T
C 3802	A	ELECTROLYTIC CAP. 100μF/6.3V M H7 or ELECTROLYTIC CAP. 100μF/6.3V M H7	CE0KMZPSL101 526R107
C 3802	B	ELECTROLYTIC CAP. 0.22μF/50V M H7 or ELECTROLYTIC CAP. 0.22μF/50V M H7	CE1JMZPSLR22 526W224
C 3803	A	ELECTROLYTIC CAP. 0.22μF/50V M H7 or ELECTROLYTIC CAP. 0.22μF/50V M H7	CE1JMZPSLR22 526W224
C 3803	B	CERAMIC CAP.(AX) Y M 0.01μF/16V or CERAMIC CAP. F Z 0.01μF/16V	CDA1CMT0Y103 1220842T
C 3804		CERAMIC CAP.(AX) Y M 0.01μF/16V or CERAMIC CAP. F Z 0.01μF/16V	CDA1CMT0Y103 1220842T
C 3805		CERAMIC CAP.(AX) Y M 0.01μF/16V or CERAMIC CAP. F Z 0.01μF/16V	CDA1CMT0Y103 1220842T
C 3806		CERAMIC CAP.(AX) Y M 0.01μF/16V or CERAMIC CAP. F Z 0.01μF/16V	CDA1CMT0Y103 1220842T
C 3807		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 3808	B	CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 3809		CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 3810	B	CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 3811	B	CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZT0F104
C 3812	B	ELECTROLYTIC CAP. 220μF/6.3V M H7 or ELECTROLYTIC CAP. 220μF/6.3V M H7	CE0KMZPSL221 526R227

Ref. No.	Mark	Description	Part No.
C 3813	A	CERAMIC CAP.(AX) SL J 15pF/50V or CERAMIC CAP. SL J 15pF/50V	CCA1JJTSL150 3S41150T
C 3813	B	CERAMIC CAP.(AX) F Z 0.047μF/50V	CCA1JZT0F473
C 3814	B	CERAMIC CAP.(AX) F Z 0.022μF/25V or CERAMIC CAP. F Z 0.022μF/25V	CDA1EZT0F223 1220843T
C 3821	A	CERAMIC CAP.(AX) B J 100pF/50V or CERAMIC CAP.(AX) B J 100pF/50V or CERAMIC CAP. B J 100pF/50V or CERAMIC CAP. B J 100pF/50V	CCA1JJT0B101 CCA1JKT0B101 3B41101T 3B42101T
C 3822	A	CERAMIC CAP.(AX) SL J 47pF/50V or CERAMIC CAP.SL J 47pF/50V	CCA1JJTSL470 3S41470T
<b>CONNECTORS</b>			
CN3801	A	ANGLE SOCKET CONNECTOR, 15P	1770612
CN3801	B	ANGLE SOCKET CONNECTOR, 17P	1770612
CN3802	A	FFC CONNECTOR BASE, SIDE 5P	JC96J05ERC0C
CN3802	B	FFC CONNECTOR BASE, SIDE 7P or FFC CONNECTOR BASE, SIDE 7P	JC96J07ERC0C 1700473
<b>IC</b>			
IC 3801	A	IC, VIDEO H-AMP LA7376	QSBLA0SSY035
IC3801	B	IC LA7372	QSBLA0SSY012
<b>COILS</b>			
L 3801		INDUCTOR 22μH-K-26T or INDUCTOR 22μH-K-26T	LLAXKDTKA220 LLAXKATTU220
<b>RESISTORS</b>			
R 3801		CARBON RES. 1/4W J 22K Ω or CARBON RES. 1/6W J 22K Ω	RCX4JATZ0223 RCX6JATZ0223
R 3802	A	CARBON RES. 1/4W J 8.2K Ω or CARBON RES. 1/6W J 8.2K Ω	RCX4JATZ0822 RCX6JATZ0822
R 3802	B	CARBON RES. 1/4W J 22K Ω or CARBON RES. 1/6W J 22K Ω	RCX4JATZ0223 RCX6JATZ0223
R 3803	A	CARBON RES. 1/4W J 1K Ω or CARBON RES. 1/6W J 1K Ω	RCX4JATZ0102 RCX6JATZ0102
R 3803	B	CARBON RES. 1/4W J 47K Ω or CARBON RES. 1/6W J 47K Ω	RCX4JATZ0473 RCX6JATZ0473
R 3804	A	CARBON RES. 1/4W J 5.6K Ω or CARBON RES. 1/6W J 5.6K Ω	RCX4JATZ0562 RCX6JATZ0562
R 3804	B	CARBON RES. 1/4W J 1K Ω or CARBON RES. 1/6W J 1K Ω	RCX4JATZ0102 RCX6JATZ0102
R 3808	A	CARBON RES. 1/4W J 33K Ω or CARBON RES. 1/6W J 33K Ω	RCX4JATZ0333 RCX6JATZ0333
R 3805	B	CARBON RES. 1/4W J 1K Ω or CARBON RES. 1/6W J 1K Ω	RCX4JATZ0102 RCX6JATZ0102
R 3806	B	CARBON RES. 1/4W J 6.8K Ω or CARBON RES. 1/6W J 6.8K Ω	RCX4JATZ0682 RCX6JATZ0682
R 3807	B	CARBON RES. 1/4W J 6.8K Ω or CARBON RES. 1/6W J 6.8K Ω	RCX4JATZ0682 RCX6JATZ0682
R 3808	B	CARBON RES. 1/4W J 33K Ω or CARBON RES. 1/6W J 33K Ω	RCX4JATZ0333 RCX6JATZ0333
R 3809	B	CARBON RES. 1/4W J 33K Ω or CARBON RES. 1/6W J 33K Ω	RCX4JATZ0333 RCX6JATZ0333
<b>MISCELLANEOUS</b>			
2B 2	A	SHIELD, TOP	0VM302519
2B 2	B	SHIELD, TOP(U13 4H)	0VM302523
2B 3	A	SHIELD, BOTTOM	0VM302520
2B 3	B	SHIELD, BOTTOM(U13 4H)	0VM302532
CL3801		JUMPER WIRE, 6P AWG26#20080/P2.0/35	WX1K7010-012
CL3802		JUMPER WIRE, 3P AWG26#2651/P2.0/80	WX1H5100-001
JW3801	B	WIRE 030/BLA/AWG28#1007	WX3001A83303

## FE Head CBA (PRV-B)

Ref. No.	Mark	Description	Part No.
		FE Head CBA (PRV-B) Consists of the following:	
B 73		SPACER;FE FE HEAD MH-131SF5/KM-1311550 or FE HEAD VTR-1X2ERS11-122	0VM405209B DHVEC01LA004 DHVEC01TE003

## FE Head CBA (PRV-C)

Ref. No.	Mark	Description	Part No.
		FE Head CBA (PRV-C) Consists of the following:	
B 73		FE HEAD HVFHF0049A SPACER;FE	DHVEC01AL002 0VM405209B